BAMSF 12.1 v.6
EVMSF 12.1 v.6
HNMSF 12.1 v.6

Draft

MEMORANDUM

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To: Mike Rowe (IDEQ)

Date: April 20, 2007

cc: Mark Dietrich, Douglas Tanner, Karen Johnson (IDEQ); Chris Morris, Al Ruberry (IDL); Jeff Jones, Will Frymire (USFS); Jeff Cundick (USBLM); Sandi Arena (USFWS); Dave Tomten, Lorraine Edmond, Joe Wallace (USEPA); Tim Mosko (CH2M Hill); Christina Cutler (SBTLUD); Dave Farnsworth, Bob Geddes, Glen Kurowski, Jim McCulloch, and Mike Vice (P4); Cary Foulk (MWH); and Dale Ralston (RHS).

From: Mark Rettmann, Dean Brame, and Bill Wright (MWH)

Reference: P4 Production Southeast Idaho Mine-Specific Selenium Program

Subject: 2007 & 2008 Surface Water Monitoring Plans—Draft

INTRODUCTION

This memorandum has been prepared by MWH for P4 Production, LLC (P4) Southeast Idaho Mine-Specific Selenium Program, specifically in support of the site investigations (SIs) and engineering evaluations/cost analyses (EE/CAs) at P4's Enoch Valley Mine (EVM), Henry Mine (HM), and Ballard Mine (BM). This memorandum functions as the 2007 and 2008 Surface Water Monitoring (SWM) work plan (WP-SWM) and the SWM sampling and analysis plan (SAP-SWM) for the new subtask, *Subtask 1d—2007 & 2008 Surface Water Monitoring*, under the SI *Task 1—Surface Water and Sediment Investigation*. Tables included in the WP-SWM and SAP-SWM are provided in Attachment A and the figures are provided in Attachment B.

The SAP-SWM consists of a field sampling plan (FSP-SWM), a quality assurance plan (QAP-SWM), and a health and safety plan (HSP-SWM). Both the WP-SWM and the SAP-SWM have been developed programmatically, applying collectively to the EVM, HM, and BM SIs. The WP-SWM and SAP-SWM detail necessary updates and additions to the approved mine-specific project work plans (PjtWPs), and the approved programmatic sampling and analysis plan (SAP), respectively. Tha SAP includes the programmatic field sampling plan (PgmFSP), quality assurance plan (PgmQAP), and health and safety plan (PgmHSP), which are referenced below in their respective sections. This memorandum shall be used in conjunction with relevant portions of these aforementioned original SI documents (PjtWPs, PjtFSPs, and SAP) in addition to each mine-specific field sampling plan (PjtFSP).

PURPOSE

The purpose of *Subtask 1d—2007 & 2008 Surface Water Monitoring*, is to comply with the IDEQ's instruction to P4 via an email from Mike Rowe (IDEQ) to Bob Geddes (P4) and Bill Wright (MWH) dated February 15, 2007, and a subsequent letter regarding Surface Water monitoring in 2007 at Enoch Valley, Henry, and Ballard Mines dated Februrary 16, 2007 from Mike Rowe (IDEQ) to Bob Geddes (P4). These SWM plans have been developed based on these instructions as well as subsequent clarification discussions with IDEQ in Boise, Idaho on March 14, 2007, a conference call on March 26, 2007, and further direction detailing the station list to be sampled (email regarding "List of sites to sample in 2007" from Mike Rowe [IDEQ] to Bob Geddes [P4] on April 3, 2007, including attachment "2007_Smpl_Sites.xls"), and the analytes to be sampled (email regarding "Additional analytes to sample from the Expanded Analyte List of Surface Water Analytes" from Mike Rowe [IDEQ] to Bob Geddes [P4] on April 3, 2007). Copies of the written communications are provided in Attachment E.

The clarified instruction given to P4 was to continue surface water quality monitoring using a subset of the extended analyte list (analytes were screened out by IDEQ) at a reduced sampling station list (determined by IDEQ) for EVM, HM, and BM during the Spring (May) 2007 and Fall (September) 2008. The following reasons were provided by IDEQ for this instruction:

- As stated in the *Area Wide Risk Management Plan* (IDEQ, 2003a), Section 4.3.2, "Exceedance of an action level indicates a need to continue monitoring during the SI phase to establish annual and seasonal trends for potential release pathways, including temporal surface water data from a near-normal annual precipitation year." Although we realize that several sites have not exceeded action levels, our recent experience in South Fork Sage Creek, where previous low levels of selenium suddenly shot up above water quality standards, strongly encourage the monitoring of all regularly sampled sites.

- Increased sampling also helps us determine site variability in both affected and unaffected sites.

- Although work has been done at some of these sites since the late 1990s, sampling for constituents on the expanded list of analytes began only in 2006.

- As noted in agency/tribal comments to the Evaluation Summary, we disagreed with some of the conclusions that contaminants from the mines were not contributing to loads in receiving rivers (e.g., Blackfoot and Little Blackfoot rivers).

The IDEQ rationale and instructions are provided in the directions included in Attachment E. It should be noted that P4 has an extensive data set for the three mines spanning almost ten years. The SWM data will add to this existing data set. Both spatial and temporal variability were taken into consideration in the approved Interim Surface Water and Sediment Investigation planning documents (IPjtWPs, IPjtFSPs and ISAP) and SI planning documents (PjtWPs, PjtFSPs, and SAP) submitted to and approved by the IDEQ. Spatial variability is addressed through a network of surface water sampling stations numbering approximately 100. Temporal variability is addressed at two levels—seasonal (within year) and annual (year-to-year). Extensive sampling data are available to characterize both spatial and temporal variability.

Results from the following sampling efforts are available to characterize seasonal and annual temporal variability:

Spring (May)	Fall (September)	High Resolution
n/a	1997	May 1999 (MST232 only)
1998	1998	June 1999 (MST232 only)
n/a	1999	July 1999 (MST232 only)
2000	n/a	August 1999 (MST232 only)
2002	2002	September 1999 (MST232 only)
2004	2004	October 1999 (MST232 only)
2006	n/a	November 1999 (MST232 only)
		December 1999 (MST232 only)
		May 2002
		July 2002
		September 2002
		November 2002
		January 2003
		March 2003
		April 2003
		May 2003
		June 2003
		July 2003

WORKPLAN—SURFACE WATER MONITORING (WP-SWM)

This memorandum invokes, by reference, the relevant portions of each mine-specific work plan (PjtWP), *P4 Production Southeast Idaho Mine-Specific Selenium Program, Comprehensive Site Investigation Final Work Plans for Enoch Valley, Henry, and Ballard mines* (MWH, 2004a). The WP-SWM is detailed programmatically below by section. Each section presents any necessary updates or additions.

1.0 INTRODUCTION

Refer to the applicable mine-specific PjtWP (MWH, 2004a).

2.0 SITE BACKGROUND

Refer to the applicable mine-specific PjtWP (MWH, 2004a).

3.0 WORK PLAN RATIONALE

The WP-SWM supports the work plan rationale identified in the appropriate mines's PjtWP (MWH, 2004a) and as identified under the Purpose section above.

4.0 SITE INVESTIGATION TASKS

The WP-SWM *Subtask 1d—2007 & 2008 Surface Water Monitoring*, as described above under the purpose section, are in addition to those tasks, subtasks, and activities presented in the appropriate mines's PjtWP (MWH, 2004a) and subsequent plans.

5.0 PROJECT MANAGEMENT PLAN

The subcontracted analytical laboratory, University of Idaho Analytical Sciences Laboratory (U of I) will remain the quality control (QC) laboratory and ACZ Labortories, Inc. (ACZ) will remain the primary laboratory.

An updated Figure 1-1, *Program Organization Chart*, is included in Attachment B. Pat Corser will assume the MWH Vice President in Charge role, replacing Donald Caldwell. William Wright will assume the Henry Mine Project Manager role, replacing Paul Stenhouse. Paul Stenhouse will replace Glenn Mills as Quality Manager. Mark Rettmann will assume the Program Safety Officer role, replacing Paul Stenhouse. Dean Brame will assume the Field Team Leader Role, replacing Paul Stenhouse. Tressa Pearson-Franks will assume the Analytical Task Manager role, replacing Mark Rettmann. Dean Brame and Cary Foulk will assume the Hydrogeologist and Geochemist roles, replacing Pam Anderson.

The Project Schedule for the WP-SWM involves conducting surface water monitoring during the first two to three weeks of May and September 2007 and 2008.

Data validation and data evaluation will be conducted upon receipt of all final laboratory data reports, the results of which will be reported in an annual SWM Report. Data evaluation will include a comparison of the SWM results with background and/or preliminary (or site-specific) risk-based benchmarks consistent with the direction provided by IDEQ on such evaluation in the SIs and EE/CAs at the time the respective SWM Report is prepared.

FIELD SAMPLING PLAN—SURFACE WATER MONITORING (FSP-SWM)

This memorandum invokes, by reference, the relevant portions of the program field sampling plan (PgmFSP) of the *P4 Production Southeast Idaho Mine-Specific Selenium Program, Comprehensive Site Investigation Final Sampling and Analysis Plan (MWH, 2004d).*

In addition, refer to each mine-specific field sampling plan (PjtFSP), *P4 Production Southeast Idaho Mine-Specific Selenium Program, Comprehensive Site Investigation Final Enoch Valley (Henry or Ballard) Mine Project Field Sampling Plan* (MWH, 2004c) for details by mine. The FSP-SWM is detailed programmatically below by section. Each section presents any necessary updates or additions.

1.0 INTRODUCTION

Refer to the PgmFSP (MWH, 2004d), the appropriate mine's PjtFSP (MWH, 2004c), or to the introduction or purpose section of this memorandum.

2.0 PROGRAM BACKGROUND

For an updated map of the three mines and the locations of the program surface water monitoring stations, see Figure 2-1, *2007 & 2008 Surface Water Monitoring Stations,* in Attachment B. Refer to the PgmFSP (MWH, 2004d), or the appropriate mine's PjtFSP (MWH, 2004c) for additional information.

3.0 INVESTIGATION OBJECTIVES

The FSP-SWM investigation objectives are as described by IDEQ in Attachment E.

4.0 SAMPLING LOCATIONS, FREQUENCY, AND SCHEDULE

This section describes the program monitoring locations, frequency, and schedule specific to *Subtask 1d—2007 & 2008 Surface Water Monitoring*. The monitoring locations, frequency, and schedule are summarized programmatically in Table 4-1, *Surface Water Monitoring Locations, Frequency, and Schedule* included in Attachment A. Program tasks involving field sampling are discussed below; a complete task list may be found in Table 3-1, *Program Work Breakdown Structure Tasks, Subtasks, and Activities* of Attachment A.

The locations of monitoring stations are shown programmatically in Figure 2-1, *2007 & 2008 Surface Water Monitoring Stations*, in Attachment B.

4.1 Task 1: Surface Water and Sediment Investigation

This task now includes four subtasks. The new Subtask 1d, *2007 & 2008 Surface Water Monitoring,* discussed below, is relevant to the FSP-SWM.

4.1.1 Subtask 1d—2007 & 2008 Surface Water Monitoring

Sampling (Monitoring) Locations. Surface water monitoring will occur at select stream, spring, dump seep, stock pond, or reservoir delta monitoring stations. The surface water stations to be monitored are listed programmatically in Table 4-1, *Surface Water Monitoring Locations, Frequency, and Schedule*, which is included in Attachment A. This list is consistent with the IDEQ requested station list in the respective email included in Attachment E.

Sampling (Monitoring) Frequency. For *Subtask 1d*, surface water will be collected four times during two Spring (May) sampling events and two Fall (September) samping events.

Sampling (Monitoring) Schedule. For *Subtask 1d*, surface water will be collected during the Spring (May) and Fall (September) of 2007 and 2008. The SWM schedule involves attempting to conduct

surface water monitoring during the historic peak run-off period as determined by the United States Geologic Service USGS) gauging station number 13063000, "BLACKFOOT RIVER AB ("above) RESERVOIR NR ("near") HENRY ID ("Idaho")", which is located on the Blackfoot River near the P4 haul road bridge, co-located with the P4 stream station MST019. The month with the historically highest mean discharge rate (cubic feet per second [cfs]) is May at 535 cfs, while April is 306 cfs and June is 287 cfs, indicating that early- to mid-May is the peak discharge period historically (as determined by the statistics reported as of March 1, 2007 online at: http://waterdata.usgs.gov/nwis/dv/?site_no=13063000&PARAmeter_cd=00060). Therefore, the first two to three weeks of May and September of 2007 and 2008 will be targeted for surface water monitoring.

5.0 SAMPLE DESIGNATION

Refer to the PgmFSP (MWH, 2004d).

6.0 SAMPLE COLLECTION AND ANALYSIS

Refer to the PgmFSP (MWH, 2004d).

6.1 Station Access Requirements

Updated relevant company and agency contacts are presented in Table 6-1, *Field Contacts*, of Attachment A.

The Degerstrom office will act as the shipping and receiving location for all field equipment, sample containers, any other relevant supplies. Suzanne Young, at the Degerstrom office, will be notified prior to shipments. Shipments may be stored temporarily in the Degerstrom maintenance facility; Bob Nelson, Degerstrom equipment superintendent, will coordinate storage. The P4 Productoin trailer house will be used for long-term storage of all supplies and secure storage of all samples prior to shipment. The field trailer is located near Dike Lake, on the southern end of the Blackfoot Resevoir, north of Soda Springs.

Samples will be shipped from the Degerstrom office or the P4 Production plant. A licensed, insured shipping company will be used (i.e., Federal Express, UPS, DHL). All sample shipments will have custody seals and be shipped using a traceable tracking number. If required to meet analysis holding times, the samples can be delivered, by field personnel, directly to the applicable shipping company's receiving station in Pocatello, Idaho.

6.2 Subtask 1d—2007 & 2008 Surface Water Monitoring

This section presents applicable updates or revisions only, by subsection to the collection procedures; quality assurance/quality control; required laboratory analyses; and field measurements for SWM.

6.2.1 Surface Water Collection

Refer to the updated Table 2-2, *Requirements for Containers, Preservation Techniques, Sample Volumes, and Holding Times*, of Attachment A, for analyte sample container requirements.

6.2.2 Surface Water Field Parameter Measurements

All field parameters will be measured using a rented multi-probe meter such as a YSI 556, or similar equipment, which will analyze for all the above-mentioned parameters. Field equipment shall be provided with the manufacturer's calibration instructions and the necessary equipment and standards.

6.2.3 Surface Water Flow Measurements

Surface water flow rate measurements or estimates, when applicable, will be made from all the surface water stations listed programmatically in the Table 4-1, *Surface Water Monitoring Locations, Frequency, and Schedule*, of Attachment A. Flow measurements are collected in conjunction with the collection of the water quality sample.

6.2.4 Surface Water Analyses

For *Subtask 1d*, SWM samples will be analyzed for the contaminants of potential concern (COPCs) identified in the IDEQ *Area Wide Risk Management Plan* (IDEQ, 2003a) and the IDEQ *Consent Order/Administrative Order On Consent for the Performance of Site Investigations (SIs) and Engineering Evaluations/Cost Analyses (EE/CAs) at P4 Production, LLC Phosphate Mine Sites in Southeastern Idaho* (IDEQ, 2003b); hereafter referred to as AOC, general water quality analyses, and several retained analytes from the May 2006 expanded analyte list as detailed in Table 6-2, *Surface Water Analytes*, of Attachment A. The expanded analytes from the May 2006 surface water data were screened by IDEQ in April 2007. The IDEQ's screening process, results, and requested analyte list for the 2007 and 2008 SWM is provided in Attachment E (email regarding "Additional analytes to sample from the Expanded Analyte List of Surface Water Analytes" from Mike Rowe [IDEQ] to Bob Geddes [P4] on April 3, 2007). The ~~reduced, expanded~~ analyte list includes dissolved aluminum, dissolved (unspeciated) chromium, and dissolved uranium. comment

In summary, the surface water samples will be analyzed for the analytes and parameters provided in Table 6-2, *Surface Water Analytes*, of Attachment A. ACZ Laboratories, Inc. (ACZ) located in Steamboat Springs, CO will perform the primary sample analyses, and the University of Idaho Analytical Sciences Laboratory (U of I) will perform quality control (QC) analyses.

QUALITY ASSURANCE PLAN—SURFACE WATER MONITORING (QAP-SWM)

This memorandum invokes, by reference, the relevant portions of the program quality assurance plan (PgmQAP) of the *P4 Production Southeast Idaho Mine-Specific Selenium Program, Comprehensive Site Investigation Final Sampling and Analysis Plan (MWH, 2004d)*. Any necessary updates or additions to the PgmQAP are presented by section below.

1.2 Program Organization

An updated Figure 1-1, *Program Organization Chart*, is included in Attachment B. Pat Corser will assume the MWH Vice President in Charge role, replacing Donald Caldwell. William Wright will assume the Henry Mine Project Manager role, replacing Paul Stenhouse. Paul Stenhouse will replace Glenn Mills as Quality Manager. Mark Rettmann will assume the Program Safety Officer role, replacing Paul Stenhouse. Dean Brame will assume the Field Team Leader Role, replacing Paul Stenhouse. Tressa Pearson-Franks will assume the Analytical Task Manager role, replacing Mark Rettmann. Dean Brame and Cary Foulk will assume the Hydrogeologist and Geochemist roles, replacing Pam Anderson.

2.1.1 Sampling Design

The number and type of samples that shall be collected and general sampling locations are summarized in Table 4-1, *Surface Water Monitoring Locations, Frequency, and Schedule*, of Attachment A. Further direction and lists of the specific analytes of interest are also provided in the WP-SWM, and the FSP-SWM sections of this memorandum.

2.2.1 Sampling Activity Summary

Programmatic surface water monitoring activities (*Subtask 1d—2007 & 2008 Surface Water Monitoring)* of monitoring at various streams and mine facility locations as summarized in Table 2-1, *Surface Water Monitoring Activities Summary*, of Attachment A.

2.2.5 Sample Preservation Requirements

Sample containers with the necessary preservative shall be provided by the contract laboratories in accordance with Table 2–2, *Requirements for Containers, Preservation Techniques, Sample Volumes, and Holding Times*, of Attachment A.

2.6.2.1 Instrumentation Requiring Calibration

The frequency of field instrument calibration for each equipment type is listed in Table 2-3, Calibration and Maintenance Requirements for Field Equipment, of Attachment A.

HEALTH & SAFETY PLAN—SURFACE WATER MONITORING (HSP-SWM)

This memorandum invokes, by reference, the program health and safety plan (PgmHSP) of the P4 Production Southeast Idaho Mine-Specific Selenium Program, Comprehensive Site Investigation Final Sampling and Analysis Plan (MWH, 2004d). Several global updates to the PgmHSP are discussed below. In addition, specific updates or additions to the PgmHSP are presented by section below.

An updated Figure 1-1, Program Organization Chart, is included in Attachment B. Pat Corser will assume the MWH Vice President in Charge role, replacing Donald Caldwell. William Wright will assume the Henry Mine Project Manager role, replacing Paul Stenhouse. Paul Stenhouse will replace Glenn Mills as Quality Manager. Mark Rettmann will assume the Program Safety Officer role, replacing Paul Stenhouse. Dean Brame will assume the Field Team Leader Role, replacing Paul Stenhouse. Tressa Pearson-Franks will assume the Analytical Task Manager role, replacing Mark Rettmann. Dean Brame and Cary Foulk will assume the Hydrogeologist and Geochemist roles, replacing Pam Anderson.

The subcontracted analytical laboratory, ACZ Laboratories, Inc. (ACZ) located in Steamboat Springs, CO will perform the primary sample analyses, and the University of Idaho Analytical Sciences Laboratory (U of I) will perform quality control (QC) analyses.

4.2 Tailgate Safety Meetings

The tailgate safety meeting process will be expanded to a Behavior Based Safety (BBS) program and Appendix E, Tailgate Safety Meeting Form, will be replaced with the BBS Card (Attachment C) for daily use during on-site work activities including site tours, sampling, construction activities, or subcontractor oversight at all of P4 Productions's Soda Springs associated operations, at which field investigations are taking place. The process is discussed below.

The BBS Card (Card) documents the daily tailgate safety briefing (Briefing) held before site activities proceed, allows review and documentation of health and safety procedures throughout the day by everyone involved, and documents a daily tailgate safety debriefing (Debriefing) at the conclusion of the day's activities.

The Cards are distributed each day during the Briefing to all personnel associated with the day's activities, including personnel from MWH or any other companies, subcontractors, clients, regulatory agencies, or visitors. The Briefing consists of a pre-shift meeting focused on discussing the day's scope of work, any safety issues/concerns, job assignments, communication plan, equipment assessment, necessary notifications, etc. The Briefing Card is documented with the personnel name and affiliation.

Notes and comments on health and safety procedures and actions are recorded over the course of the day knowing that a group exchange will occur during the Debriefing at the end of the shift (day). At the Debriefing, each individual has the opportunity to discuss each completed Card and any associated concerns, safety issues, near-misses, etc. with all personnel. All cards are signed by the personnel present and collected by MWH. If items with corrective actions are noted, a second list is utilized to carry over the identified items to the next days BBS Briefing. In addition, near-miss or corrective action items will be forwarded to the appropriate project personnel for follow up and resolution in accordance with the MWH incident reporting process work-related injury/illness or vehicle accident process (Attachment D).

The goal of the Value-Driven Safety Program is to involve everyone on the field team or site visit staff—MWH personnel, subcontractors, clients, client contractors, regulatory agencies, and visitors—to be responsible and aware of health and safety throughout the day, empower them to call out perceived safety hazards, concerns, or problems, and provide a conveyance method to relay the information to the on-site safety officer and the rest of the field team/staff. This iterative process allows for continuous improvement of the health and safety program through more effective lessons learned, knowledge sharing, and utilization.

REFERENCES

Refer to the PgmFSP (MWH, 2004d), or to the appropriate mine's PjtFSP (MWH, 2004c). Specific references utilized in the FSP-SWM are included below.

IDEQ, 2002a. *Conditional Approval of September 2002 Surface Water and Sediment Work Plan Decision Memorandum, Monsanto Site-Specific Investigations.* Letter from Rick Clegg to Robert Geddes, September.

IDEQ, 2002b. *Final Area- Wide Human Health and Ecological Risk Assessment, Selenium Project Southeast Idaho Phosphate Mining Resource Area.* Prepared for the IDEQ by TtEMI, December.

IDEQ, 2003a. *Final Draft Area-Wide Risk Management Plan, Remedial Action Goals and Objectives, and Risk-Based Action Levels For Addressing Releases From Historic Phosphate Mining Operations in Southeast Idaho.* Soda Springs, Idaho, April.

IDEQ, 2003b. *Consent Order/Administrative Order On Consent for the Performance of Site Investigations (SIs) and Engineering Evaluations/Cost Analyses (EE/CAs) at P4 Production, LLC Phosphate Mine Sites in Southeastern Idaho*, November.

MWH, 2002. *Task 5, Low-Resolution Seasonal Surface Water Sampling Decision Memorandum—Final, P4 Production's Southeast Idaho Mine-Specific Selenium Program.* Prepared for P4 Production. September.

MWH, 2004a. *Comprehensive Site Investigation, Enoch Valley (Henry or Ballard) Mine Work Plan–Final, P4 Production's Southeast Idaho Mine-Specific Selenium Program.* Prepared for P4 Production. March.

MWH, 2004b. *Engineering Evaluation/Cost Analysis, Enoch Valley (Henry or Ballard) Mine Work Plan–Final, P4 Production's Southeast Idaho Mine-Specific Selenium Program.* Prepared for P4 Production. March.

MWH, 2004c. *Comprehensive Site Investigation, Enoch Valley (Henry or Ballard) Mine Project Field Sampling Plan–Final, P_4 Production's Southeast Idaho Mine-Specific Selenium Program.* Prepared for P4 Production. April.

MWH, 2004d. *Comprehensive Site Investigation, Sampling and Analysis Plan–Final, P_4 Production Southeast Idaho Mine-Specific Selenium Program* (i.e., SAP consisting of PgmFSP, PgmHSP, and PgmQAP). Prepared for *P4* Production. April.

ATTACHMENT A—TABLES

Field Sampling Plan—2007 & 2008 Surface Water Monitoring (FSP-SWM)

- *Table 3-1—Program Work Breakdown Structure, Tasks, Subtasks, and Activities*
- *Table 4-1—Surface Water Monitoring Locations, Frequency, and Schedule*
- *Table 6-1—Field Contacts*
- *Table 6-2— Surface Water Analytes*

Quality Assurance Plan—2007 & 2008 Surface Water Monitoring (QAP-SWM)

- *Table 2-1— Surface Water Monitoring Activities Summary*
- *Table 2-2—Requirements for Containers, Preservation Techniques, Sample Volumes, and Holding Times*
- *Table 2-3—Calibration and Maintenance Requirements for Field Equipment*

TABLE 3-1
PROGRAM WORK BREAKDOWN STRUCTURE
TASKS, SUBTASKS, AND ACTIVITIES

TASK	SUBTASK	ACTIVITY
Task 1—Surface Water and Sediment Investigation	Subtask 1a—Investigation of historical irrigation practices	
	Subtask 1b—Surface water and sediment sampling	Activity 1b-1—impacted riparian zones
		Activity 1b-2—fish tissue quality investigation
	Subtask 1c—2006 Surface Water Sampling	
	Subtask 1d—2007 & 2008 Surface Water Monitoring	
Task 2—Air Investigation	Subtask 2a—Data compilation	
Task 3—Geology and Groundwater Investigation	Subtask 3a—Phase I Investigation	Activity 3a-1—review available hydrogeologic information
		Activity 3a-2—well inventory
		Activity 3a-3—spring and seep survey
		Activity 3a-4—spring and dump seep flow characterization
		Activity 3a-5—sampling existing mine and domestic wells, springs and seeps
		Activity 3a-6—revise conceptual hydrogeologic site model
	Subtask 3b—Phase II Investigation	Activity 3b-1—aerial mapping of Ballard Mine
		Activity 3b-2—focused investigation of existing wells
		Activity 3b-3—existing well sampling and groundwater level monitoring
		Activity 3b-4—revise conceptual hydrogeologic site model
		Activity 3b-5—preparation of a technical memorandum for monitoring well installations
		Activity 3b-6—water balance
		Activity 3b-7—2006 groundwater sampling
		Activity 3b-8— review of available hydrogeologic information
		Activity 3b-9—geochemical typing of wells, seeps, and springs
		Activity 3b-10—spring flow characterization
		Activity 3b-11—groundwater level measurements
Task 4—Soil Investigation	Subtask 4a—Water balance investigation	
	Subtask 4b—Characterization of extent of riparian zone soil contamination at streams, ponds, seeps, springs, and wetlands	
	Subtask 4c—Characterization of waste rock dump extent of soil contamination	
	Subtask 4d—Agronomic testing of unreclaimed, poorly reclaimed, and well reclaimed land	
Task 5—Aquatic Ecological Investigation	Subtask 5a—Stream habitat assessment	
	Subtask 5b—Fish tissue quality investigation	

TABLE 3-1
PROGRAM WORK BREAKDOWN STRUCTURE
TASKS, SUBTASKS, AND ACTIVITIES

TASK	SUBTASK	ACTIVITY
Task 6—Terrestrial Ecological Investigation	Subtask 6a—Habitat assessment of ponds, wetlands, and non-fish-bearing streams	
	Subtask 6b—Characterization of extent of riparian zone vegetation contamination at streams, ponds, seeps, springs, and wetlands	
	Subtask 6c—Evaluate potential replacements for alfalfa in reclamation seed mix	
	Subtask 6d—Identification and location of known selenium absorber species	
	Subtask 6e—Veterinary toxicology panel on livestock utilization of reclaimed land	
	Subtask 6f—Characterization of waste rock dump extent of vegetation contamination	
	Subtask 6g—Performance monitoring of non-seleniferous cap	
Task 7—Facilities Investigation		
Task 8—Data Validation	Subtask 8a—Surface water	
	Subtask 8b—Sediment	
	Subtask 8c—Groundwater	
	Subtask 8d—Soil	
	Subtask 8e—Fish	
	Subtask 8f—Vegetation	
Task 9—Data Evaluation	Subtask 9a—Surface water	
	Subtask 9b—Sediment	
	Subtask 9c—Groundwater	
	Subtask 9d—Soil	
	Subtask 9e—Fish	
	Subtask 9f—Vegetation	
Task 16*—Reporting		
Task 17—Project and Program Management		
Task 18—Meetings		

Notes:
*Tasks 10–15 are reserved for the EE/CAs.

TABLE 4–1
SURFACE WATER MONITORING LOCATIONS, FREQUENCY, AND SCHEDULE

Feature‡	Monitoring Station†,‡	Location		Station Number	2007 & 2008	
		Latitude	Longitude		May	Sept.
Blackfoot River	Above Blackfoot Reservoir	42 49 17.80	111 33 10.58	MST232	X	X
	Below Ballard Creek	42 48 49.28	111 30 21.52	MST019	X	X
	Below State Land Creek	42 48 31.97	111 30 06.28	MST020	X	X
	Below Wooley Valley Creek	42 46 04.24	111 26 44.41	MST022	X	X
	Below Dry Valley Creek, (1997 #20)	42 47 05.00	111 23 07.00	MST023	X	X
	Above Wooley Range Ridge Creek	42 47 40.00	111 22 05.00	MST026	X	X
	Below Angus Creek	42 49 42.00	111 20 49.00	MST027	X	X
	Above Diamond Creek Rd.	42 49 27.30	111 19 20.30	MST028[2]	X	X
Meadow Creek	Above Blackfoot Reservoir	42 55 28.00	111 30 53.00	MST235[1]	X	X
Little Blackfoot River	Above Blackfoot Reservoir	42 49 32.50	111 18 39.90	MST234	X	X
	Immediately below Henry Mine (1997 #24)	42 53 50.60	111 29 24.80	MST044	X	X
	Above Henry Creek (1997 #23)	42 54 10.70	111 29 30.10	MST045	X	X
	Above Reese Creek	42 55 18.26	111 26 25.24	MST049[1]	X	X
	Upstream of Henry cutoff road	42 55 41.01	111 26 33.49	MST254[1]	X	X
Lone Pine Creek	Above spring-fed creek	42 53 50.40	111 27 17.40	MST054	X	X
West Fork Lone Pine Creek	Above Lone Pine Creek	42 51 59.49	111 26 21.78	*MST057*	X	X
Tributary to West Fork Lone Pine Creek	Above West Fork Lone Pine Creek	42 51 57.85	111 26 17.01	*MST276*	X	X
Strip Mine Creek	Below Henry Mine	42 52 01.70	111 27 03.40	*MST063*	X	X
Angus Creek	Below No Name Creek	42 50 47.60	111 22 15.00	MST127	X	X
	Above No Name Creek and below Rasmussen Creek	42 51 07.00	111 22 29.00	MST132	X	X
	Above Rasmussen Creek	42 51 08.00	111 22 32.00	MST128[2]	X	X
	R-B&M-10, below Wooley Valley Mine	42 51 16.50	111 23 50.80	MST129[2]	X	X
No Name Creek	R-B-2, Above Angus Creek	TBD	TBD	*MST137*[2]	X	X
West Fork Rasmussen Creek	Above Rasmussen Creek	42 51 31.00	111 23 34.60	*MST274*[2]	X	X
Rasmussen Creek	Above Angus Creek	42 51 08.00	111 22 31.00	*MST131*	X	X
	M-B&M-1, below Enoch Valley Mine (1997 #38)	42 51 48.00	111 23 50.00	*MST133*	X	X
	Below West Pond Creek	42 52 05.00	111 24 12.00	*MST134*	X	X
	Above West Pond Creek	42 52 10.20	111 24 20.60	*MST135*	X	X
	Headwaters near Enoch Valley Mine Shop Pond	42 52 34.00	111 25 03.00	*MST136*	X	X
East Fork Rasmussen Creek	Above Rasmussen Creek	42 51 31.70	111 23 01.40	*MST143*	X	X
	Headwaters	42 52 16.57	111 23 41.69	*MST269*	X	X
West Pond Creek	Headwaters, below West Pond	42 52 16.07	111 24 18.67	*MST144*	X	X
Long Valley Creek	Below Ballard Mine, (ponded area)	42 50 54.00	111 29 49.00	*MST050*	X	X
East Fork Long Valley Creek	Below Henry Mine	42 52 18.23	111 28 58.49	*MST051*	X	X
Spring Fed Tributary to Long Valley Creek	Above Long Valley Creek	42 51 52.20	111 29 04.20	*MST277*	X	X
Henry Creek	Above Little Blackfoot River	42 53 49.69	111 29 15.31	*MST052*	X	X

TABLE 4–1
SURFACE WATER MONITORING LOCATIONS, FREQUENCY, AND SCHEDULE

Feature[‡]	Monitoring Station[†,‡]	Location		Station Number	2007 & 2008	
		Latitude	Longitude		May	Sept.
Ballard Creek	Above Blackfoot River	42 48 56.30	111 30 07.32	*MST066*	X	X
	Headwaters	42 49 23.79	111 29 36.31	*MST067*	X	X
West Fork Ballard Creek	Headwaters	42 49 34.06	111 29 50.84	*MST068*	X	X
Short Creek	Below Ballard Mine	42 49 11.23	111 29 19.75	*MST069*	X	X
East Fork Short Creek	Above Short Creek	42 49 14.40	111 29 08.50	*MST278*	X	X
Wooley Valley Creek	Above Blackfoot River	42 47 15.18	111 24 53.08	*MST088*	X	X
	Below North Fork Wooley Valley Creek	42 49 28.70	111 26 19.40	*MST089*	X	X
	Above North Fork Wooley Valley Creek	42 49 28.00	111 26 49.00	*MST090*	X	X
Tributary toWooley Valley Creek	Between the R.R. tracks, upstream of Wooley Valley Creek	TBD	TBD	*MST279*[2]	X	X
Loadout Creek	Above Wooley Valley Creek	TBD	TBD	*MST091*[2]	X	X
North Fork Wooley Valley Creek	Above Wooley Valley Creek	42 49 40.00	111 27 04.30	*MST092*	X	X
	Above Ballard Mine	42 50 28.00	111 28 34.00	*MST093*[1]	X	X
Spring-fed tributary #1 of North Fork Wooley Valley Creek	Below Ballard Mine	42 49 56.00	111 28 10.00	*MST094*	X	X
Spring-fed tributary #2 of North Fork Wooley Valley Creek	Below Ballard Mine	42 49 39.00	111 28 05.00	*MST095*	X	X
Tributary of North Fork Wooley Valley Creek	Below Ballard Mine	42 49 30.00	111 27 45.00	*MST096*	X	X
Caldwell Creek	Below Phosphoria Formation outcrop (1997 #62)	42 44 11.90	111 22 00.20	*MST101*[1]	X	X
Stewart Creek	Above Diamond Creek	42 41 32.15	111 12 50.64	*MST236*[1]	X	X
Timber Creek	Above Diamond Creek	42 42 03.50	111 11 22.30	MST237[1]	X	X
Blackfoot Reservoir Delta	At Blackfoot River	42 49 48.76	111 33 21.95	MRV011	X	X
	At Little Blackfoot River	42 54 42.39	111 32 02.34	MRV016	X	X
	At Meadow Creek	42 55 25.86	111 31 17.64	MRV017[1]	X	X
Ponds	*Henry Mine, South Pit Pond*	42 51 35.37	111 27 05.63	*MSP055*	X	X
	Ballard Mine, Upper Elk Pond	42 49 28.12	111 28 53.33	*MSP011*	X	X
	Ballard Mine, Lower Elk Pond	42 49 38.93	111 28 50.58	*MSP012*	X	X
	Ballard Mine, Northeast Pond	42 50 07.38	111 28 24.56	*MSP013*	X	X
	Ballard Mine, Pit #4 Stock Pond	42 49 12.23	111 28 52.85	*MSP059*	X	X
	Ballard Mine, Pit #6 Pond	42 49 35.00	111 28 42.00	*MSP062*	X	X
	Enoch Valley Mine, South Pond	42 52 01.95	111 23 28.00	*MSP017*	X	X
	Enoch Valley Mine, Keyhole Pond	42 52 08.05	111 23 52.00	*MSP018*	X	X
	Enoch Valley Mine, Bat Cave Pond	42 52 23.94	111 24 06.02	*MSP019*	X	X
	Enoch Valley Mine, West Pond	42 52 22.00	111 24 27.00	*MSP020*	X	X
	Enoch Valley Mine, Stock Pond	42 52 10.00	111 24 21.00	*MSP021*	X	X
	Enoch Valley Mine, Tipple Pond	42 52 40.53	111 25 08.69	*MSP022*	X	X
	Enoch Valley Mine, Shop Pond	42 52 31.01	111 25 11.11	*MSP031*	X	X

TABLES—Field Sampling Plan—2007 & 2008 Surface Water Monitoring (FSP-SWM)

TABLE 4–1
SURFACE WATER MONITORING LOCATIONS, FREQUENCY, AND SCHEDULE

Feature‡	Monitoring Station†,‡	Location		Station Number	2007 & 2008	
		Latitude	Longitude		May	Sept.
Springs	*Enoch Valley Mine, Hedin Spring*	42 52 55.70	111 25 41.70	*MSG001*	X	X
	Henry Mine, Taylor Spring	42 52 02.40	111 27 04.60	*MSG002*	X	X
	Ballard Mine, Garden Hose Spring	42 49 41.00	111 29 18.00	*MSG003*	X	X
	Ballard Mine, Holmgren Spring	42 49 17.46	111 28 16.67	*MSG004*	X	X
	Ballard Mine, Cattle Spring	42 49 20.45	111 28 01.60	*MSG005*	X	X
	Ballard Mine, Southeast Spring	42 49 42.60	111 27 59.00	*MSG006*	X	X
	Ballard Mine, South of Southeast Spring	42 49 38.10	111 27 48.40	*MSG007*	X	X
Dump Seeps	*Enoch Valley Mine, West Dump Seep*	42 52 13.00	111 24 11.00	*MDS025*	X	X
	Enoch Valley Mine, South Dump Seep	42 51 48.80	111 23 36.00	*MDS026*	X	X
	Henry Mine, South Pit Overburden Dump Seep (1997 #28)	42 51 37.81	111 26 39.24	*MDS016*	X	X
	Henry Mine, South Pit Overburden Dump Limestone Drain (formerly FD002) (1997 #29)	42 51 58.60	111 27 05.90	*MDS022*	X	X
	Ballard Mine, Pit #2 Upper Dump Seep	42 49 43.00	111 29 22.00	*MDS030*	X	X
	Ballard Mine, Pit #2 Lower Dump Seep South	42 49 43.00	111 29 25.00	*MDS031*	X	X
	Ballard Mine, Pit #2 Lower Dump Seep North	42 49 46.00	111 29 27.00	*MDS032*	X	X
	Ballard Mine, Goat Seep	42 49 51.00	111 29 26.00	*MDS033*	X	X

Notes:
† Station identification for those sampled in September 1997 is provided parenthetically.
‡ Stream names in *italics* were assigned by either IMA or P4 Production as these streams are unnamed on USGS maps or, as far as is known, are unnamed by common usage of local inhabitants. The reason for this is that most such streams are small with intermittent or ephemeral flows.
[1]Stations are programmatic background and hence are not impacted by any phosphate mine.
[2]Stations are project-specific background and hence are not impacted by any P4 Production mine.
Location (GPS) coordinates use the NAD27 datum and are presented in ddd mm ss.ss format (degrees minutes seconds).
TBD – To Be Determined

TABLE 6-1
FIELD CONTACTS

Company or Agency	Contact	Title	Telephone
P4 Production	Bob Geddes	P4 Production Program Manager	208-547-1234
	Mike Vice	Mine Reclamation Specialist	208-547-1277
Degerstrom	Bob Nelson	Maintenance Facility Contact	208-574-6110
	Suzanne Young	Office Building Contact	208-574-6112
Idaho Department of Environmental Quality	Mike Rowe	IDEQ Program Manager	208-236-6160
MWH	Bill Wright	MWH Program Manager & Henry Mine Project Manger	425-602-4000
	Dean Brame	Enoch Valley Mine Project Manager & Field Team Leader	425-602-4000
	Mark Rettmann	Ballard Mine Project Manager, & Program Safety Officer	425-602-4000
	Paul Stenhouse	Quality Manager	425-602-4000
	Cary Foulk	Supervising Hydrogeologist/Geochemist Adviser	970-879-6260
	Tressa Pearson-Franks	Analytical Task Manger, Technical & Field Support	425-602-4000
	Colin Duffy	Technical & Field Support	425-602-4000
Ralston Hydrologic Services	Dale Ralston	Consulting Hydrogeologist	208-883-0533
ACZ Laboratory	Sue Webber	Laboratory Program Manager Contact	800-334-5493, x110
University of Idaho Analytical Sciences Laboratory	Steve McGeehan	Laboratory Program Manager Contact	208-885-7900
	Janet Snow	Sample Receiving Contact	208-885-7081

TABLE 6-2
SURFACE WATER ANALYTES

Parameter	Basis	Method	EDL	Reporting Units	Holding Times (days)
alkalinity	total	SM2320B	2	mg/L	14
aluminum*	dissolved	M200.7–ICP	0.03	mg/L	180
cadmium	dissolved	M200.8–ICP/MS	0.0001	mg/L	180
calcium	dissolved	M200.7–ICP	0.2	mg/L	180
chloride	dissolved	M300.0	0.5	mg/L	28
chromium* (unspeciated)	dissolved	M200.8–ICP/MS	0.0001	mg/L	180
hardness	n/a	DM2340B-Calculation	n/a	n/a	n/a
magnesium	dissolved	M200.7–ICP	0.2	mg/L	180
nickel	dissolved	M200.8–ICP/MS	0.0006	mg/L	180
potassium	dissolved	M200.7–ICP	0.3	mg/L	180
selenium	total	SM3114-Se B, AA-Hydride	0.001	mg/L	180
sodium	dissolved	M200.7–ICP	0.3	mg/L	180
sulfate	dissolved	M300.0	0.5	mg/L	28
uranium*	dissolved	M200.8–ICP/MS	0.0001	mg/L	180
vanadium	dissolved	M200.8–ICP/MS	0.0002	mg/L	180
zinc	dissolved	M200.8–ICP/MS	0.002	mg/L	180

Notes:
Basis—Basis is for surface water (non-blank) samples. Blanks will be analyzed for total results when analyte methods allow.
Method—Method to be utilized by primary laboratory (ACZ). Methods utilized by QA/QC lab may vary due to instrumental differences.
EDL—Estimated Detection Limit of primary laboratory (ACZ).
n/a—Not Applicable
Chromium—Represents the unspeciated Cr (total Cr [III] and Cr [VI]) as required by the AOC and indicated in the RMP.
* Parameter was retained from IDEQ's expanded 2006 surface water analyte list of previously screened out contaminants of potential concern and other general water quality parameters.

TABLES—Quality Assurance Plan—2007 & 2008 Surface Water Monitoring (QAP-SWM)

TABLE 2-1
SURFACE WATER MONITORING ACTIVITIES SUMMARY

Matrix	Number of Monitoring Stations	Number of Mine Sites	Analytical Parameters[1]
Surface Water	85 stations	3	Analyzed in accordance with the FSP-SWM "Table 6-2, *Surface Water Analytes*

Notes:
[1] See Section 6.2.4 of the FSP-SWM *Surface Water Analyses* for a description of the respective analytical parameters.

TABLE 2-2
REQUIREMENTS FOR CONTAINERS, PRESERVATION, TECHNIQUES, SAMPLE VOLUMES, AND HOLDING TIMES

Sample Container—water matrices (ACZ color code)	Preservative	Parameter*	Method	Sample Preparation Method	Maximum Holding Time (Days)
125 mL HDPE (green)	HNO_3	dissolved metals	EPA M200.7 and EPA M200.8	dissolved (field filtered)	180
250 mL HDPE (red)	HNO_3	total metals	EPA M200.7, EPA M200.8, and SM 3114B	total hot plate digestion (M200.2 ICP-MS)-raw	180
250 mL HDPE (white)	none	chloride and sulfate	M300.0	dissolved (field filtered)	28
500 mL HDPE (none)	none	alkalinity	SM2320B	total (raw)	14

Notes:
*Refer to Table 6-2, *Surface Water Analytes*, for surface water parameters and methods.

TABLE 2-3
CALIBRATION AND MAINTENANCE REQUIREMENTS FOR FIELD EQUIPMENT*

Field Parameter	Required Procedure	Minimum Frequency	Required Equipment or Calibration Fluids
pH	2-point calibration	Prior to use at each station	One pH buffer (7 pH), Reference Standard
Temperature	N/A	N/A	N/A
Dissolved Oxygen	Atmospheric calibration	Prior to use at each station	Atmospheric oxygen with elevation
Conductivity	1-point reference	Prior to use at each station	Reference Standard
Turbidity	1-point calibration	Prior to use at each station	Reference Standard
Flow	Velocity equivalence and spin test (Price meters) or equivalent	When the rotor is changed	Stopwatch, measuring tape

Notes:
*In the event of a discrepancy, the manufacturer's instruction manual shall take precedence.

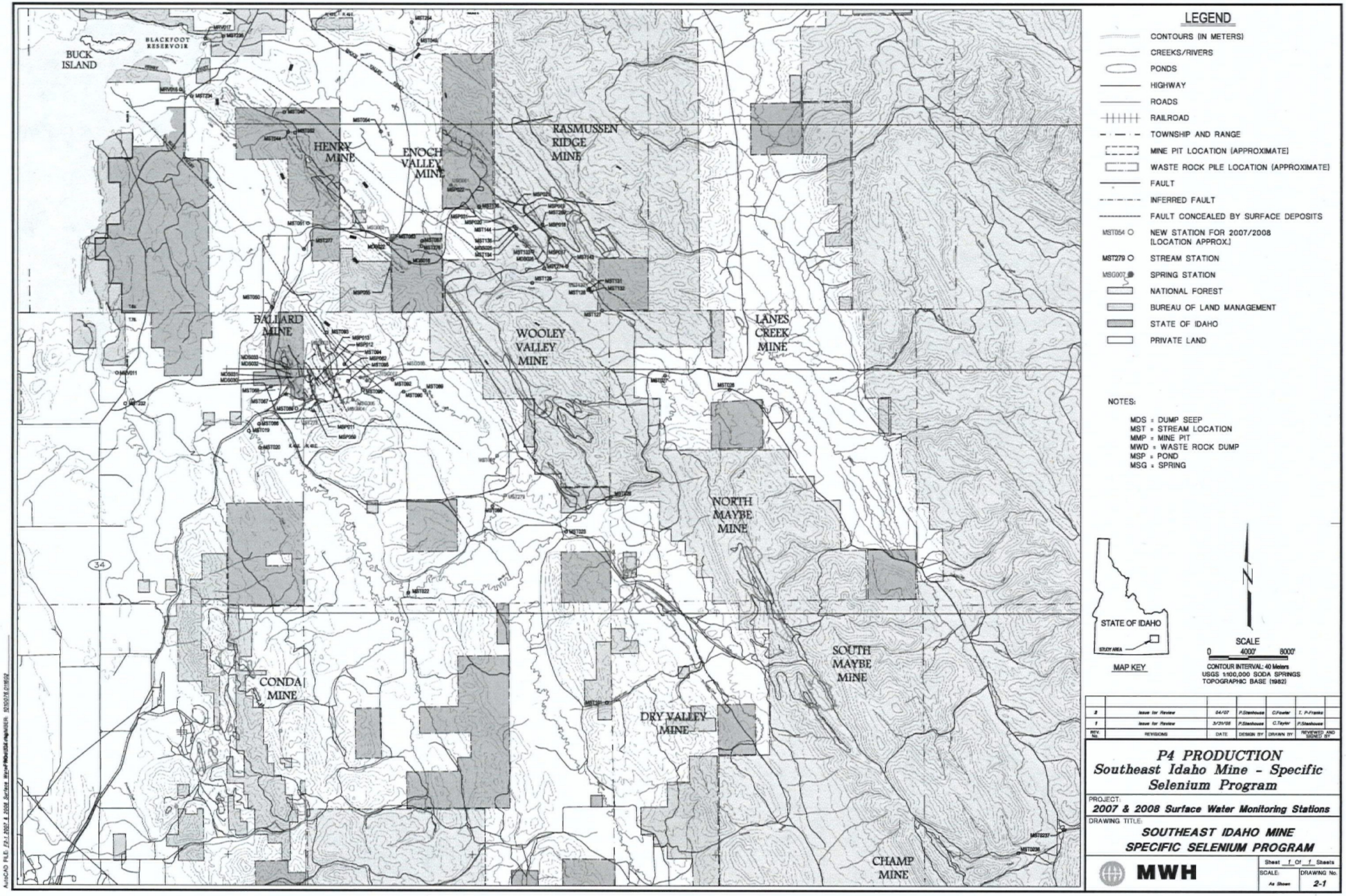
ATTACHMENT B—FIGURES

Field Sampling Plan—2007 & 2008 Surface Water Monitoring (FSP-SWM)

- *Figure 2-1—2007 & 2008 Surface Water Monitoring Stations*

Quality Assurance Plan—2007 & 2008 Surface Water Monitoring (QAP-SWM)

- *Figure 1-1—Program Organization Chart*



LEGEND

- CONTOURS (IN METERS)
- CREEKS/RIVERS
- PONDS
- HIGHWAY
- ROADS
- RAILROAD
- TOWNSHIP AND RANGE
- MINE PIT LOCATION (APPROXIMATE)
- WASTE ROCK PILE LOCATION (APPROXIMATE)
- FAULT
- INFERRED FAULT
- FAULT CONCEALED BY SURFACE DEPOSITS
- MST054 ○ NEW STATION FOR 2007/2008 (LOCATION APPROX.)
- MST279 ○ STREAM STATION
- MSG007 ● SPRING STATION
- NATIONAL FOREST
- BUREAU OF LAND MANAGEMENT
- STATE OF IDAHO
- PRIVATE LAND

NOTES:

MDS = DUMP SEEP
MST = STREAM LOCATION
MMP = MINE PIT
MWD = WASTE ROCK DUMP
MSP = POND
MSG = SPRING

MAP KEY

N

SCALE
0 4000' 8000'

CONTOUR INTERVAL: 40 Meters
USGS 1:100,000 SODA SPRINGS
TOPOGRAPHIC BASE (1982)

REV No.	REVISIONS	DATE	DESIGN BY	DRAWN BY	REVIEWED AND SIGNED BY
2	Issue for Review	04/07	P.Steinhouse	C.Fowler	I. P.Franks
1	Issue for Review	3/31/08	P.Steinhouse	C.Taylor	P.Steinhouse

P4 PRODUCTION
Southeast Idaho Mine - Specific Selenium Program

PROJECT:
2007 & 2008 Surface Water Monitoring Stations

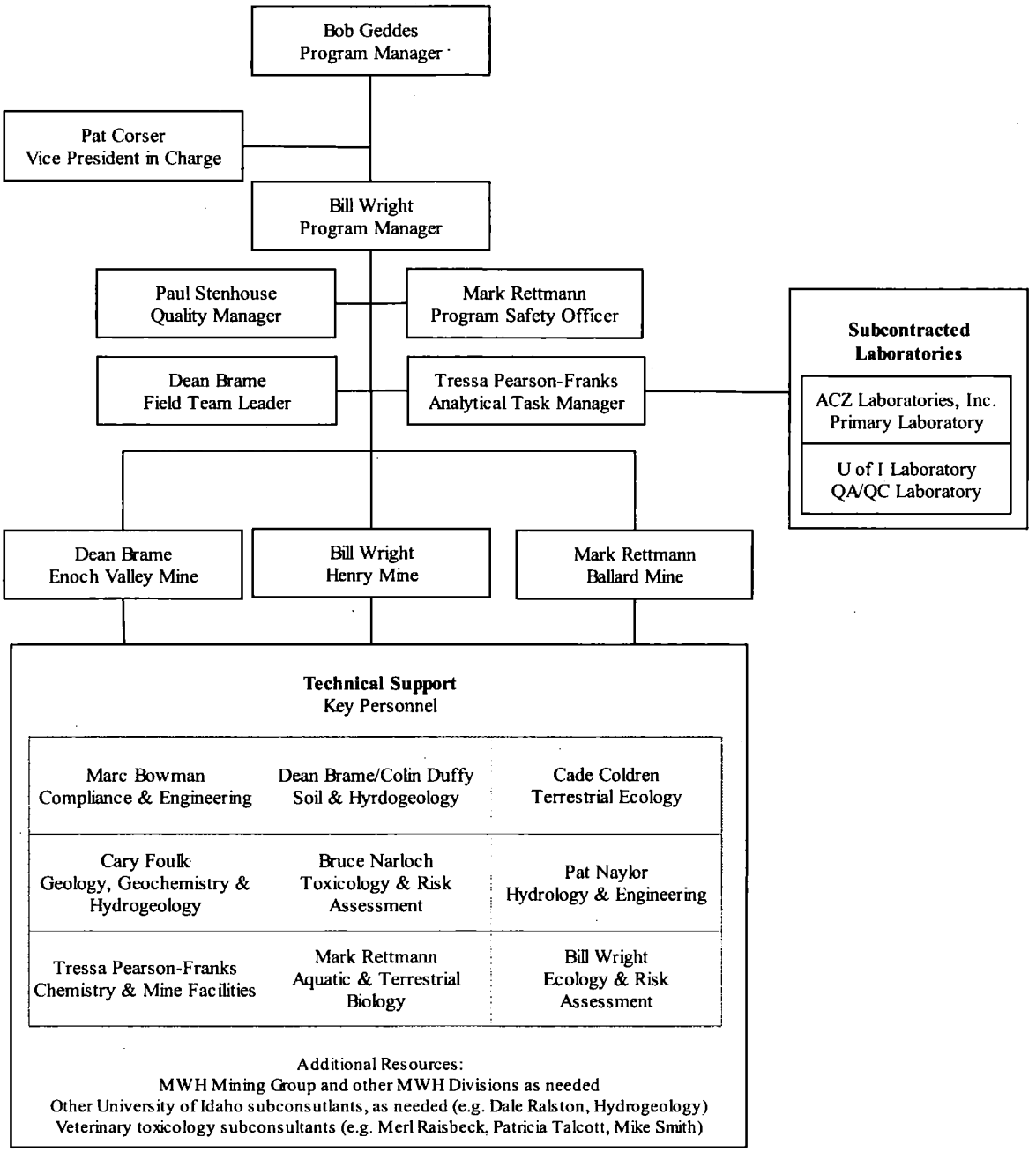
DRAWING TITLE:
SOUTHEAST IDAHO MINE SPECIFIC SELENIUM PROGRAM

MWH

Sheet 1 Of 1 Sheets
SCALE: As Shown
DRAWING No. 2-1

AutoCAD FILE: F:\...\2007 & 2008 Surface Water Monitoring.dwg MINER, 5/30/08 6:18:52

Figure 1-1
Program Organization Chart



ATTACHMENT C—BEHAVIOR BASED SAFETY CARD

MWH

MONSANTO imagine

BEHAVIOR BASED SAFETY
Monsanto Soda Springs Operations

H&S Documentation

	Site-specific HASP on-hand
	Sign In & Out w/ Facility Control
	Formal Training Needed for Activities: • (MT)-Monsanto H&S Training • (OH)-OSHA HAZWOPWER • (MS)-MSHA Open Pit Mine Training • (O)-Other:
	Daily Tailgate Briefing Conducted and Documented herein (led by H&S Mgr or Field Team Leader); name (time/date): _____

Site Hazard Review

	Physical / Environmental Hazards • Slip/trip/fall, mine pit-high walls (fall, falling objects, rock slides, collapse), pinch points • Vehicle & heavy equipment traffic • Heat/cold stress, drowning, high or turbulent currents, soft sediment • Remote area (limited cell phone reception & distance to hospital)
	Chemical/Radiological Hazards • Bottle preservatives (nitric & sulfuric acid) • Contaminants are not present at concentrations hazardous to workers
	Biological Hazards • Snakes, spiders, ticks, fleas, poisonous plants, micro-organisms (hantavirus), aggressive big game or livestock • Bloodborne pathogens (1st Aid/CPR)
	Other Hazards • _____

Personal Vehicle Safety

	Stay Within Site/Legal Speed Limits
	Seatbelt Mandatory when in Vehicle
	No Cell Phone Use While Driving
	Vehicle & equipment check • first-aid kit, fuel & tires, fire extinguisher & eyewash, adjust mirrors for proper sight
	Lights on at ALL TIMES

Personal Protective Equipment (PPE)

	Level D: longs pants, t-shirts, nitrile gloves (while sampling).
	Upgraded Level D: safety-toe boots & hard hats on active facilities or in any mine pit, and safety glasses.
	Upgraded PPE:

Emergency Procedures

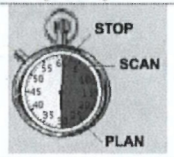
	First Aid/CPR, Transport to nearest hospital as applicable or necessary.
	Contact Emergency Responders (ERs), or mine-ERs, as necessary, if unable to move or transport victim.

H&S Values and Attitudes

Family, friends & co-workers depend on YOU to work safely today.

STOP, SCAN (look/listen), & PLAN

Whenever walking into a new situation/ location, "TAKE 30"!



Communication must be 2-Way or it isn't communication! Contact is never enough—you must get a response

Mining Vehicle Safety

	Heavy Equipment Always Have RIGHT OF WAY
	Ensure any Equipment Operator (EO) can see you/your vehicle BEFORE entering any area, with Eye Contact
	Identify high traffic areas—use caution

Work Activities H&S Review

	Pre-work Survey of each new situation/ location (Stop, Scan, Plan)
	Positions of People & Surroundings Pre-ID'd & managed (site walk-around):
	Slips/Trips/Falls & High wall hazards
	High traffic areas
	Heat/Cold stress
	High water & turbulent currents
	Biological hazards
	Proper/safe Sampling Techniques
	Housekeeping as a Priority
	Proper Lifting techniques or get help
	Safe Driving practices

Tailgate H&S Documentation

Purpose	
	Job No.:
	Site Tour
	Sampling Activities:
	Construction Oversight:
	Other:
Location	
	Mine(s):
	Soda Springs Phosphate Plant (Plant)
	Adjacent Plant Properties
	Other:

New Tailgate Briefing Topic(s): Previously Identified Items / Lessons Learned

Briefing	Debriefing	Attendees of Tailgate Meetings & Work

Hospital Information & Route

Phone*: 911
Caribou ER (Soda Springs): 208-547-3341
Portneuf ER (Pocatello): 208-239-1800
*('9' plus number at Enoch Valley Mine)

Hospital Route:

Caribou Memorial Hospital-Emergency Services, proceed S on Hwy 34 to Hwy 30 W in Soda Springs (2nd S). Proceed to 3rd W, and turn S on 3rd S.

Portneuf Medical Center (East Campus), proceed on Hwy 30/34 W from Soda Springs to I-15 N and take the Clark St exit. The hospital is at the top of the hill.

Portneuf Medical Center (West Campus)-Emergency Care, proceed on Hwy 30/34 W from Soda Springs to I-15 N through Pocatello and take the Clark St exit. Drive W on Clark, turning S on 15th St. The W Campus is on the right side.

Description of Near-Hits witnessed Today:

_____

_____

_____

Identify a Process or Use of Equipment witnessed today that can be improved:

_____

_____

_____

Observer: _____

Others Present: _____

_____

Date / Time: _____

Additional Comments or Attendees

_____

_____

_____

_____

_____

Use "+" for good performance, "-" for items to improve or correct, or "NA" for not applicable.

ATTACHMENT D—MWH INCIDENT REPORTING PROCESS

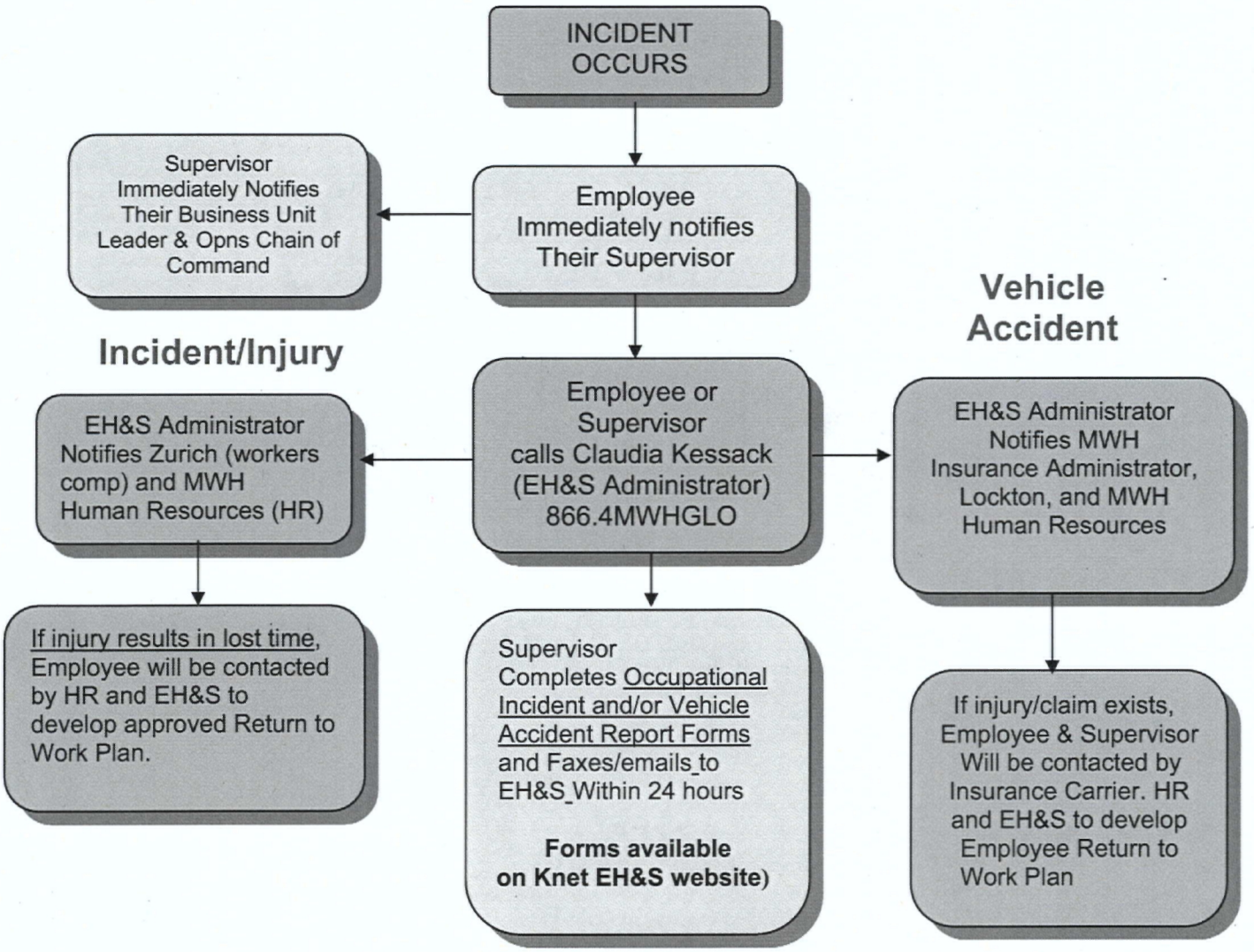
MWH

MWH

Incident Reporting Process
Work-Related Injury / Illness or Vehicle Accident

1. Employee(s) should seek necessary medical attention as appropriate:
   (a) On-site first aid; (b) emergency room—e.g., identified in safety plan; (c) via 911—transport by ambulance if there is any uncertainty about severity of injury; (d) designated occupational health clinic near office; (e) pre-designated personal physician. Tell medical personnel this is a work-related incident.
2. MWH Employee(s) should immediately notify their supervisor. The MWHA employee or supervisor should contact Claudia Kessack (EH&S Administrator) at **866-4MWHGLO (866.469.4456)**. At this time, an online Zurich Insurance form and an initial incident report will be completed by Claudia Kessack.
3. **IMMEDIATELY** report any significant injury, dismemberment, chemical exposure, or work-related death, to Rick Shassetz, Director, Environment, Health & Safety (EH&S) (720 224-3515).
4. The MWHA employee or supervisor will follow up by completing an Occupational Incident Report Form and/or Vehicle Accident Report Form **within 24 hours**, and forwarding it to Claudia Kessack. (Fax: 303.410.4196) or e-mail to Claudia.Kessack@mwhglobal.com. ***Forms can be found on the EH&S website on KNet.***
5. There may also be client-specific forms and notifications to complete. Check with the project manager for project-specific reporting requirements.

Revised: 11/14/06



ATTACHMENT E—IDEQ INSTRUCTIONS

- *Letter Re: Surface water monitoring in 2007 at Enoch Valley, Henry, and Ballard Mines. Mike Rowe to Bob Geddes. February 16, 2007.*
- Email Re: List of sites to sample in 2007. Mike Rowe to Bob Geddes. April 3, 2007.
- Email Re: Additional analytes to sample from the Expanded List of Surface Water Analytes. Mike Rowe to Bob Geddes. April 3, 2007.

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

444 Hospital Way, #300 • Pocatello, Idaho 83201 • (208) 236-6160

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

16 Feb 07

Robert Geddes
Monsanto P4 Production
P. O. Box 816
Soda Springs, ID 83276

Re: Surface water monitoring in 2007 at Enoch Valley, Henry, and Ballard Mines

Dear Bob,

In regard to our discussion on Monday's (12 Feb 07) conference call on P4 sampling in 2007, I have talked with the other agencies and Tribes. We feel it is in the best interest of P4, the agencies, and the Tribes to continue surface water quality monitoring at Enoch Valley, Henry, and Ballard mines for the following reasons.

- "Exceedance of an action level indicates a need to continue monitoring during the SI phase to establish annual and seasonal trends for potential release pathways, including temporal surface water data from a near-normal annual precipitation year." (Area Wide Risk Management Plan, Section 4.3.2)

- Recent experience in South Fork Sage Creek, where previous low levels of selenium suddenly shot up above water quality standards, strongly encourage the continuation of monitoring of all past sampled sites.

- Increased sampling also helps determine site variability in both affected and unaffected sites.

- Although work has been done at some of these sites since the late 1990s, sampling for constituents on the expanded list of analytes began only in 2006.

- As noted in agency/tribal comments to the Evaluation Summary, we disagreed with some of the conclusions that contaminants from the mines were not contributing to loads in receiving rivers (e.g., Blackfoot and Little Blackfoot rivers).

The agencies and Tribes direct P4 (Monsanto) to sample surface water quality for the extended list of analytes at all on-going monitoring sites to include, but not limited to, one spring and one fall sampling event. The spring sample should target the peak runoff to the extent practicable. Sampling shall continue through a finalized EE/CA with a

reviewed and approved plan that will guide monitoring during the implementation and post-removal site control phases of the project.

To speed up the approval of a sampling plan, the agencies and Tribes feel that the 2006 plan can be updated for the 2007 field season with only slight modifications. The agencies and Tribes are committed to providing a quick turnaround on approving such a plan.

In addition, as it concerns sampling of vegetation on waste rock dumps, would you please provide us with a brief summary of work done (e.g., number and type of samples for each site by year) previous to that reported in the October 2006 Evaluation Summary? Such information will help us decide whether additional sampling is warranted.

Thank you and please let me know if you have any questions. You can contact me at 236-6160 or michael.rowe@deq.idaho.gov.

Sincerely,

Mike Rowe
Regional Mining Project Manager

cc: Bill Wright (MWH)
Doug Tanner, Mark Dietrich, (IDEQ)
Jeff Jones, Will Frymire (C-TNF)
Jeff Cundick (BLM)
Allen Ruberry, (IDL)
Christina Cutler (Shoshone-Bannock Tribes)
Sandi Arena (USFWS)
Dave Tomten (EPA)
File copy/Monsanto/Correspondence

<MichaelRowe@deq.idaho
.gov>
04/03/2007 06:16 PM

To <robert.l.geddes@monsanto.com>

cc <dave.w.farnsworth@monsanto.com>,
<william.wright@mwhglobal.com>,
<Mark.D.Rettmann@us.mwhglobal.com>,
<tomten.dave@epa.gov>, <jjones13@fs.fed.us>,
<wlfrymire@fs.fed.us>, <mkauffman@fs.fed.us>,
<jeff_cundick@blm.gov>,
<ccutler@shoshonebannocktribes.com>,
<aruberry@idl.idaho.gov>, <sandi_arena@fws.gov>,
<Douglas.Tanner@deq.idaho.gov>,
<Bruce.Olenick@deq.idaho.gov>

Subject List of sites to sample in 2007

Bob,

Attached is a list of sites the agencies and tribes are directing P4 to sample in 2007. This new list includes additional sites from those discussed previously. The rationale for sampling these additional sites is presented below.

Mike

Ponds

At our meeting in Boise on 14 March, P4 requested relief from the monitoring and characterization requirements that the agencies have placed on them. P4 stated that ponds were already well characterized and that no additional characterization was needed. There was no discussion of individual ponds, sampling results, or which ponds could be eliminated from future sampling events. Nevertheless, there was a sense that P4's statements had some merit and that the agencies and tribes should be open to considering elimination of pond stations. It has since become clear that several participants of that meeting left with different understanding of direction on this issue. To increase the agencies' and tribes' comfort on making such a decision, there should be a formal proposal, along with accompanying rationale, so the entities have a clear understanding of the work performed to date and results.

We have reviewed the compilation of data that was provided by MWH listing all 18 pond stations, and all sampling data that has been collected for these stations since 1997. Most of the pond stations have been sampled on 6 or more occasions over a range of seasons, and there is more comfort in eliminating these ponds from future monitoring provided appropriate methods were used to collect unbiased samples. There are however a few pond stations that do not have adequate data to assess variability on a seasonal and year-to-year basis. Our specific recommendations, along with our rationale, on ponds for which P4

must continue sampling are as follows.

Spring and Fall sampling
MPS012 - this pond has only been sampled four times and never in the fall.
MSP013 - this pond has been sampled only once.
MSP017 - this pond showed a potential decrease in Se concentration from 2004 to 2006 even though 2006 was a higher (near 'normal') water year. Additional samples are needed to verify that there 'is or is not' a decreasing trend in the Se concentration (with time).
MSP018 - this pond showed a potential decrease in Se concentration from 2004 to 2006 even though 2006 was a higher (near 'normal') water year. Additional samples are needed to verify that there 'is or is not' a decreasing trend in the Se concentration (with time).
MSP019 - the data indicate that there is an increasing trend of selenium in this pond, which additional data would help confirm.
MSP020 - the data indicate that there is a decreasing trend of selenium in this pond, which additional data would help confirm.
MSP021 - this pond showed a potential decrease in Se concentration from 2004 to 2006 even though 2006 was a higher (near 'normal') water year. Additional samples are needed to verify that there 'is or is not' a decreasing trend in the Se concentration (with time).
MSP022 - this pond has been observed to discharge to 'live' water and thus is not always 'isolated.' This pond also receives runoff from currently active operations which could change conditions in the ponds. Also, the data indicate that there is a decreasing trend of selenium in this pond, which additional data would help confirm.
MSP031 - this pond has been observed to discharge to 'live' water and thus is not always 'isolated.' This pond also receives runoff from currently active operations which could change conditions in the ponds.
MSP059 - this pond has only been sampled four times and never in the fall.
MSP062 - this pond has been sampled only twice and never in the fall.
Fall sampling only
MSP011 - this pond has never been sampled in the fall.
MSP055 - this pond has never been sampled in the fall.

We realize that some of these ponds may be dry in the fall and therefore sampling would be impossible.

Other Stations

Following our meeting on 26 March to discuss other sites to sample in 2007, the agencies met to go over the list proposed at the meeting. We increased the list of stations to sample in 2007 as follows.

MRV016 - this site gives us good information at the point where the Little Blackfoot River enters the Reservoir
MST044 - this site brackets any potential input from Henry Creek
MST045 - this site brackets any potential input from Henry Creek
MST050 - this site measures any possible contribution from Ballard Mine and high sediment Se has been observed
MST051 - this site is close to the base of a Ballard Mine dump, although it is realized this site may be dry
MST052 - this site is important as it could be impacted by Henry Mine, although it is realized this site may be dry
MST088 - this site provides good information on what potential loading Wooley Valley Creek has on Blackfoot River, although it is realized this site may be dry
MST232 - this site shortens the distance between MST019 and MRV011, also picks up any possible alluvial flow from Ballard Mine

MST234 - this site gives us a lower Little Blackfoot River site that is still in the river

Questions
MST266 - could not find this site, will assume it will be sampled in 2007

Assumptions
MST277 is to be sampled in 2007
MST278 is to be sampled in 2007

Finally, we need to emphasize that this is a dynamic process. There may be questions that arise that will require adding monitoring stations, constituents, or making other changes to the monitoring program.

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2007_Smpl_Sites.xls

Evaluation of Surface Water Results from May 2006 for Chromium
and Expanded List of Surface Water Analytes

The most recent data for chromium and expanded list of surface water analytes from P4's May 2006 Data Validation Report Memorandum were examined. Chromium values were evaluated to determine the possible need for speciating chromium. The Expanded List of Surface Water Analytes was screened as to analytes to be sampled in the future.

Chromium

Only unfiltered total Cr was analyzed. A field blank value of 0.0032 mg/L resulted in a reporting limit of <0.016 mg/L (5 x 0.0032 = 0.016). All stations reported values less than 0.016 mg/L, which exceeds the chronic criterion for Cr VI of 0.011 mg/L. Looking at the 'uncensored' data only one station (EVM S Dump Seep [MDS026]) had a concentration (0.020 mg/L) greater than the Cr VI chronic criterion.

Our recommendation for future monitoring is to continue sampling for total chromium. Chromium VI can be eliminated as a problem through sampling for total chromium if the following conditions are met.

1. All values for total dissolved Cr are below the state surface water quality chronic criterion for Cr VI (i.e., 0.011 mg/L dissolved Cr VI).
2. All non-detects for dissolved Cr must be at a method detection limit or sample detection limit (i.e., reporting limit), which are below the state surface water quality chronic criterion for Cr VI (i.e., 0.011 mg/L dissolved Cr VI).

If either of the above conditions is not met, then additional sampling for speciation of chromium should be considered.

Expanded List of Surface Water Analytes

Six sources were employed for screening levels of analytes on the expanded surface water list that were sampled in May 2006. Analytes which were not screened include: Kjeldahl nitrogen, total dissolved solids, and total suspended solids.

The first screen was to compare concentrations for copper, lead, and silver to the water quality standards. Hardness was calculated from calcium and magnesium and the surface water quality standards were adjusted accordingly. Comparisons were made for chronic criterion for copper and lead and acute criterion for silver.

The second screening process involved comparison of analyte concentrations to Table 7-1. *Criteria for Surface Water, Sediment, and Soil* (Final Area Wide Human Health and Ecological Risk Assessment, December 2002, Tetra Tech EM, Inc.), which addressed aluminum, antimony, arsenic, beryllium, copper, lead, mercury, silver, and thallium (see below).

Metal	Acute (mg/L)	Chronic (mg/L)
Aluminum[1]	0.750	0.087
Antimony	0.088	0.030
Arsenic	0.340	0.150
Beryllium[2]	0.130	0.0053
Copper[3]	0.013	0.009
Lead[3,4]	0.065	0.0025
Mercury[5]	0.0014	0.00077
Silver	0.0017[3,6]	0.00012
Thallium[7]	1.4	0.04

[1]for pH 6.5 to 9.0 and expressed as total recoverable
[2]lowest observable effect level from 45 Federal Register 79326
[3]hardness-dependent value with 25 mg/L as minimum and 400 mg/L as maximum calcium carbonate; value entered is for 100 mg/L calcium carbonate. Value must be corrected for hardness.
[4]values represent change to filtered basis
[5]derived from inorganic mercury but applied to total mercury. Does not account for food web uptake.
[6]acute value was adjusted by two to be comparable to 1985 derivations
[7]lowest observable effect level from 45 Federal Register 79340

For the third screen, May 2006 data on the expanded list of surface water analytes collected by P4 were evaluated based on background data collected in 2001 as part of the area wide monitoring program (Appendix A). The following table provides the descriptive statistics from background sites for the respective analytes.

Statistic	Concentration (mg/L)							
	Aluminum	Barium	Copper	Iron	Lead	Manganese	Molybdenum	Uranium
Average	0.059	0.049	0.003	0.111	0.000	0.019	0.001	0.001
Count	26	26	26	18	26	26	30	26
Standard Deviation	182.52	25.69	14.25	372.16	1.01	26.13	0.54	0.33
Minimum	0.0098	0.0110	0.0001	0.0050	0.0001	0.0010	0.0001	0.0003
Median	0.0200	0.0510	0.0001	0.0160	0.0001	0.0120	0.0013	0.0006
75 %tile	0.0286	0.0698	0.0006	0.0388	0.0001	0.0205	0.0013	0.0009
90 %tile	0.0490	0.0830	0.0024	0.0607	0.0002	0.0340	0.0013	0.0012
95 %tile	0.0823	0.0863	0.0052	0.3029	0.0004	0.0513	0.0014	0.0013
Maximum	0.9500	0.0945	0.0730	1.6000	0.0053	0.1300	0.0028	0.0015

For several analytes, all observed values were reported below the detection limit. As such, the following assumptions were made: minimum was equal to 0; maximum was equal to the detection limit; and average was equal to one-half the detection limit. The results are listed below.

Statistic	Concentration (mg/L)					
	Antimony	Arsenic	Beryllium	Mercury	Silver	Thallium
Average	0.001	0.0003	0.0025	0.0013	0.0001	0.001
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
Maximum	0.0025	0.0005	0.005	0.0025	0.00025	0.0025

Comparisons to previous data collected for the expanded list of surface water analytes in 2000-2002 were used for the fourth screen. Those historic data are presented in Appendix B.

The State of Oregon Guidance for Ecological Risk Assessment was used for the fifth screening. The table below is Table 1. Screening Level Values for Plants, Invertebrates, and Wildlife Exposed to Soil and Surface Water from Guidance for Ecological Risk Assessment: Levels I, II, III, IV (Oregon Department of Environmental Quality last update Dec 01).

Chemical	Surface Water – Aquatic (mg/L)
Barium	0.004
Cobalt	0.023
Iron	1.000
Manganese	0.120
Molybdenum	0.370
Uranium	0.0026

The final screen looked only at cobalt. The Record of Decision for the Blackbird Mine in central Idaho developed a surface water clean up level for dissolved cobalt. The following is from the Explanation of Significant Difference for the Record of Decision for the Blackbird Mine Lemhi County, Idaho – draft (Environmental Protection Agency, August 2006).

> *In the absence of an established State WQS and AWQC, a weight of evidence approach was used to select an appropriate toxicity reference value (TRV) which was used to establish the cleanup level for cobalt. Available literature data, site-specific testing data, and screening criteria were all considered. The selected cleanup level was 0.038 mg/L.*

Results

Several analytes exceeded one or more of the screening levels, but not all screens were used for each analyte. They are discussed below.

Aluminum

Aluminum exceeded both the screening level of 0.087 mg/L and 95th percentile of background value of 0.0823 mg/L at 18 stations (Table 1). Although four of the mine ponds exhibited higher levels of Al, most of the exceedance sites were stream sites including three sites (Little Blackfoot River above Reese Creek [MST049], Meadow Creek above Blackfoot Reservoir [MST235], and Little Blackfoot River upstream of Henry cutoff road [MST254]) considered to be background sites. The concentrations measured at the pond sites were higher than those observed in 2001 when analytes on the expanded list were last sampled (Appendix B). It should also be noted that the higher concentration at one pond site (EVM Stock Pond [MSP021]) was only one of three samples taken at that time. The overall average for this site was below the screening level.

Barium

A field blank value of 0.11 mg/L resulted in a reporting limit of <0.55 mg/L (5 x 0.11 = 0.55). All stations reported values less than 0.55 mg/L, a reporting limit that is above the 95th percentile of background value of 0.0863 mg/L. Looking at the 'uncensored' data, barium concentrations ranged from 0.001 to 0.13 mg/L. Only BM Goat Seep (MDS033) at 0.095 mg/L and EVM Hedin Spring (MSG001) at 0.13 mg/L were greater than the background screening level. The values from these two sites were elevated over those seen in seeps, springs, and headwater streams in the 2001 sampling event (Appendix B).

Cobalt

One site, EVM Keyhole Pond [MSP018], had a value of 0.030. This concentration was greater than the Oregon guidance of 0.023 mg/L, but did not exceed the Blackbird clean-up level.

Copper

All concentrations were reported below the method detection limit of 0.010 mg/L. Based on 'uncensored' data there was one exceedance of the hardness-adjusted chronic criterion for copper in BM Pit #4 Stock Pond (MSP059). Assuming concentrations at ½ of the detection limit (0.005 mg/L) showed only one site, North Fork Lone Pine Creek (MST275), exceeding the chronic criterion.

Lead

A field blank value of 0.00060 mg/L resulted in a reporting limit of <0.0030 mg/L (5 x 0.00060 = 0.0030). Looking at the 'uncensored' data, no concentration exceeded the hardness adjusted surface water quality chronic criterion. Even estimating all the concentrations at ½ of the reporting limit (i.e., 0.0015 mg/L), only one site, North Fork Lone Pine Creek (MST275), exceeded the chronic criterion.

Manganese
Manganese exceeded the 95th percentile of background value of 0.0513 mg/L screening level at ten stations (Table 1): values ranged from 0.14 to 3.5 mg/L. All sites were seeps, springs, or ponds except for a stream site on Angus Creek (MST126), which at 0.053 mg/L was only slightly higher than the screening value. Manganese concentrations in 2006 were within the range of values (<0.0020 to 5 mg/L) observed in 2001 (Appendix B).

Molybdenum
At the majority of the sites, molybdenum concentrations were less than 0.010 mg/L, which still exceeds the 95th percentile of background value of 0.0014 mg/L. Only two sites (EVM Haul Road Pond [MSP023] at 0.05 mg/L and WF Ballard Creek headwaters [MST068] at 0.16 mg/L) showed concentrations greater than the highest concentration of 0.046 mg/L reported in 2001. None of the stations exceeded the Oregon guidance of 0.37 mg/L.

Silver
All concentrations were reported below the method detection limit of 0.010 mg/L. Based on 'uncensored' data there were no exceedances of the hardness-adjusted acute criterion for silver. At concentrations estimated at ½ of the detection limit, there were 15 sites that exceeding the acute criterion (Table 1). Of these sites, three were pond sites, one was a reservoir delta site, and the remaining eleven sites were stream sites. Five of the fifteen sites showing an exceedance at ½ the detection limit are considered to be background sites. Those sites were Blackfoot Reservoir Delta at Meadow Creek (MRV017), Little Blackfoot River above Reese Creek (MST049), North Fork Wooley Valley Creek above BM (MST093), Meadow Creek above Blackfoot Reservoir (MST235), and Little Blackfoot River upstream of Henry cutoff road (MST254).

Uranium
A field blank value of 0.0025 mg/L resulted in a reporting limit of <0.013 mg/L (5 x 0.0025 = 0.013). All stations reported values less than 0.013 mg/L, which exceeds the 95th percentile of background value of 0.0013 mg/L and the Oregon guidance level of 0.0026 mg/L. Looking at the 'uncensored' data, uranium concentrations ranged from 0.00004 to 0.060 mg/L well within the range of values from 0.0022 to 0.1 mg/L observed for seeps, springs, headwater streams, and ponds in 2001 (Appendix B).

Conclusions

Only aluminum, manganese, silver, and uranium appeared to have concentrations above screening levels at more than two sampling stations. The other analytes either did not exceed a screening criteria or exceeded a screening criteria at only one or two sites. Therefore, only aluminum, manganese, silver, and uranium were considered for additional sampling as part of the ongoing surface water monitoring program.

Higher concentrations of aluminum were more likely to be observed in stream sites, including three background stations, than ponds, seeps, or springs. Aluminum is generally not considered a problem in surface water and no state surface water quality standard currently exists although there is a secondary constituent standard for aluminum in the state's Ground Water Quality Rule. However, some of the observed concentrations were much higher than the screening levels. Therefore, it is recommended that sampling for aluminum be continued at all sites until further information indicates otherwise.

Like aluminum, there is no state surface water quality standard for manganese but there is a secondary constituent standard in the state's Ground Water Quality Rule. Unlike aluminum, the highest concentrations were observed in ponds, seeps, and springs although values observed in 2006 were similar to those seen in 2001. Considering the above, there appears to be no reason to continue sampling for manganese until further information indicates otherwise (e.g., elevated levels of manganese in local groundwater).

Silver showed no exceedances of state water quality standards when 'uncensored' data were examined. Higher levels of concern appeared only when concentrations were assumed to be ½ of the detection limit. Only three of the sites that exceeded the acute criterion for silver were ponds, seeps, or springs. The remaining sites were one reservoir delta station and eleven stream stations, five of which were background stations. Considering the above, there appears to be no reason to continue sampling for silver until further information indicates otherwise.

Although uranium was within the range of values from the 2001 sampling event, the concentrations observed in 2006 at many of the sites were above the screening levels. This would be especially true if concentrations were considered to be ½ of the reporting limit. Therefore, it is recommended that sampling for uranium be continued at all sites until further information indicates otherwise.

Table 1. Exceedances of screening levels for aluminum (Al), barium (Ba), cobalt (Co), copper (Cu), chromium (Cr), lead (Pb), managanese (Mn), molybdenum (Mo), and silver (Ag) by station.

Station Name	Station ID	Exceedance of Screening Level								
		Al	Ba	Co	Cu	Cr	Pb	Mn	Mo	Ag
HM S Pit Overburden Dump Seep	MDS016							√		
HM S Pit Overburden Dump Drain	MDS022									
EVM S Dump Seep	MDS026					√[1]		√		
BM Pit #2 Lower Dump Seep S	MDS031									
BM Pit #2 Lower Dump Seep N	MDS032									
BM Goat Seep	MDS033		√[1]							
EVM Hedin Spring	MSG001		√[1]							
HM Taylor Spring	MSG002							√		
BM SE Spring	MSG006									
BM Dredge Pond	MSP010									
BM Lower Elk Pond	MSP012									√[2]
BM NE Pond	MSP013									√[2]
HM Henry Pond	MSP014							√		
HM Smith Pond	MSP015									
HM Center Henry Pond	MSP016									
EVM S Pond	MSP017							√		
EVM Keyhole Pond	MSP018	√		√[3]				√		
EVM Bat Cave Pond	MSP019	√						√		
EVM W Pond	MSP020							√		
EVM Stock Pond	MSP021	√[4]						√		
EVM Haul Road Pond	MSP023								√[5]	
BM Pit #4 Stock Pond	MSP059	√			√[1]					√[2]
Blackfoot Res Delta at Meadow Cr	MRV017									√[2]
Little Blackfoot River ab Reese Cr	MST049	√								√[2]
Long Valley Cr bel BM (ponded area)	MST050									√[2]
WF Ballard Cr headwater	MST068								√[5]	
Wooley Valley Cr bel NF Wooley Valley Cr	MST089	√								
NF Wooley Valley Cr ab BM	MST093									√[2]
Angus Cr ab Blackfoot R	MST126	√						√		
Angus Cr bel No Name Cr	MST127	√								
Rasmussen Cr ab Angus Cr	MST131	√								
Rasmussen Cr bel EVM	MST133	√								√[2]
Rasmussen Cr bel W Pond Cr	MST134									√[2]
Rasmussen Cr bel W Pond Cr	MST135	√								√[2]
EF Rasmussen Cr ab Rasmussen Cr	MST143	√								
EF Lone Pine Cr bel Wooley Valley Mine	MST226	√								√[2]
Little Blackfoot River ab Blackfoot Res	MST234	√								
Meadow Cr ab Blackfoot Res	MST235	√								√[2]
Little Blackfoot River ab Henry cutoff road	MST254	√								√[2]
EF Rasmussen Cr headwaters	MST269									√[2]
Long Valley Cr downstream of MST050	MST270	√								
NF Lone Pine Cr NE and ab EF Long Pine Cr	MST275	√			√[2]		√[2]			√[2]

[1]based on 'uncensored' data

[2]assuming a concentration of ½ of the detection limit

[3]above Oregon guidance and below Blackbird clean-up level

[4]three samples taken at that site with only one sample greater than the screening criteria, the overall average of the three samples was below the screening criterion

[5]above highest concentration observed in 2001and below Oregon guidance

Appendix A, Table 1. Surface water analytical results from background stations (Table H-7, Area Wide Human Health and Ecological Risk Assessment, Volume 2 of 2, Tetra Tech EM Inc., December 2002).

Station Identification	Station Name	Sample Event	Sample Type	Analytical Results[2]										
				Al		Sb	As	Ba		Be	Cu		Fe	
				ug/L	Avg &/or 1/2 dl	ug/L	ug/L	ug/L	Avg &/or 1/2 dl	ug/L	ug/L	Avg &/or 1/2 dl	ug/L	Avg &/or 1/2 dl
CALTT004	Caldwell Cr	1		20	20	<2.5	<0.5	84	84	<5	0.75	0.75	<10	5
CALTT004	Caldwell Cr	2		20	20	<2.5	<0.5	82	82	<5	<0.13	0.065	13	13
CALTT004	Caldwell Cr	3		28	30.5	<2.5	<0.5	93	94.5	<5	<0.13	0.065		
CALTT004	Caldwell Cr	3	DUP	33		<2.5	<0.5	96		<5	<0.13			
CCATT029	Crow Cr above Deer Cr	1		20	20	<2.5	<0.5	58	58	<5	0.53	0.53	38	38
CCATT029	Crow Cr above Deer Cr	2		14	14	<2.5	<0.5	60	60	<5	<0.13	0.065	50	50
CCATT029	Crow Cr above Deer Cr	3		13	13	<2.5	<0.5	52	52	<5	3.1	3.1		
DIATT018	Diamond Cr at USFS boundary	1		14	14	<2.5	<0.5	20	20	<5	0.29	0.29	15	15
DIATT018	Diamond Cr at USFS boundary	2		23	23	<2.5	<0.5	28	28	<5	<0.13	0.065	10	10
DIATT018	Diamond Cr at USFS boundary	3		20	20	<2.5	<0.5	25	25	<5	<0.13	0.065		
MCATT030	Montpelier Cr above mining	1		9.8	9.8	<2.5	<0.5	46	46	<5	0.5	0.5	17	17
MCATT030	Montpelier Cr above mining	2		11	11	<2.5	<0.5	50	50	<5	<0.13	0.065	<10	5
MCATT030	Montpelier Cr above mining	3		12	12	<2.5	<0.5	57	57	<5	<0.13	0.065		
NNATT013	No Name Cr above mining	1		950	950	<2.5	<0.5	27	27	<5	73	73	1600	1600
NNATT013	No Name Cr above mining	2	4-D	36	53	<2.5	<0.5	24	25.7	<5	1.8	0.643	22	55.0
NNATT013	No Name Cr above mining	2	4-D	57		<2.5	<0.5	27		<5	<0.13		57	
NNATT013	No Name Cr above mining	2	4-D	66		<2.5	<0.5	26		<5	<0.13		86	
NNATT013	No Name Cr above mining	2	DUP/4-D	40		<2.5	<0.5	12		<5	<0.13	0.065	31	31
SCATT024	Sage Cr above mining	1		16	16	<2.5	<0.5	28	28	<5	<0.13	0.065	18	18
SCATT024	Sage Cr above mining	2		14	14	<2.5	<0.5	14	14	<5	<0.13	0.065	39	39
SCATT024	Sage Cr above mining	3		31	31	<2.5	<0.5	28	28	<5	<0.13	0.065		
SHETT019	Sheep Cr	1		45	45	<2.5	<0.5	67	67	<5	5.9	5.9	17	17
SHETT019	Sheep Cr	2		20	20	<2.5	<0.5	69	69	<5	<0.13	0.065	74	74
SHETT019	Sheep Cr	3		15	15	<2.5	<0.5	70	70	<5	<10	5		
SLUTT005	Slug Cr at USFS boundary	1		15	15	<2.5	<0.5	74	74	<5	0.5	0.5	15	15
SLUTT005	Slug Cr at USFS boundary	2		13	13	<2.5	<0.5	77	77	<5	<0.13	0.065	15	15
SLUTT005	Slug Cr at USFS boundary	3		34	34	<2.5	<0.5	87	87	<5	<0.13	0.065		
SMATT021	Smoky Cr above mining	1		12	12	<2.5	<0.5	20	20	<5	0.69	0.69	<10	5
SMATT021	Smoky Cr above mining	2		22	22	<2.5	<0.5	11	11	<5	<0.13	0.065	<10	5
SMATT021	Smoky Cr above mining	3		92	92	<2.5	<0.5	26	26	<5	1.6	1.6		

Appendix A, Table 1. Continued.

Station Identification	Station Name	Sample Event	Sample Type[1]	Analytical Results[2]										
				Pb		Mn		Hg	Mo		Ag	Tl	U	
				ug/L	Avg &/or 1/2 dl	ug/L	Avg &/or 1/2 dl	ug/L	ug/L	Avg &/or 1/2 dl	ug/L	ug/L	ug/L	Avg &/or 1/2 dl
CALTT004	Caldwell Cr	1		<0.25	0.125	31	31		<2.5	1.25	<0.25	<2.5	0.93	0.93
CALTT004	Caldwell Cr	2		<0.25	0.125	37	37	<2.5	0.72	0.72	<0.25	<2.5	0.7	0.7
CALTT004	Caldwell Cr	3		<0.25	0.125	36	56		<2.5	1.25	<0.25	<2.5	0.93	0.925
CALTT004	Caldwell Cr	3	DUP	<0.25		76			<2.5		<0.25	<2.5	0.92	
CCATT029	Crow Cr above Deer Cr	1		<0.25	0.125	18	18		<2.5	1.25	<0.25	<2.5	1	1
CCATT029	Crow Cr above Deer Cr	2		<0.25	0.125	19	19	<2.5	0.89	0.89	<0.25	<2.5	1.3	1.3
CCATT029	Crow Cr above Deer Cr	3		<0.25	0.125	12	12		<2.5	1.25	<0.25	<2.5	0.94	0.94
DIATT018	Diamond Cr at USFS boundary	1		<0.25	0.125	6.8	6.8		<2.5	1.25	<0.25	<2.5	0.61	0.61
DIATT018	Diamond Cr at USFS boundary	2		<0.25	0.125	12	12	<2.5	0.54	0.54	<0.25	<2.5	0.56	0.56
DIATT018	Diamond Cr at USFS boundary	3		<0.25	0.125	14	14		<2.5	1.25	<0.25	<2.5	0.62	0.62
MCATT030	Montpelier Cr above mining	1		<0.25	0.125	2.7	2.7		<2.5	1.25	<0.25	<2.5	0.61	0.61
MCATT030	Montpelier Cr above mining	2		<0.25	0.125	6.8	6.8	<2.5	1.3	1.3	<0.25	<2.5	0.4	0.4
MCATT030	Montpelier Cr above mining	3		<0.25	0.125	6.9	6.9		<2.5	1.25	<0.25	<2.5	0.67	0.67
NNATT013	No Name Cr above mining	1		5.3	5.3	31	31		<2.5	1.25	<0.25	<2.5	0.31	0.31
NNATT013	No Name Cr above mining	2	4-D	<0.25		130		<2.5	1.1		<0.25	<2.5	0.36	
NNATT013	No Name Cr above mining	2	4-DAY	0.71	0.32	130	130.0	<2.5	1.5	1.80	<0.25	<2.5	0.41	0.40
NNATT013	No Name Cr above mining	2	4-DAY	<0.25		130		<2.5	2.8		<0.25	<2.5	0.42	
NNATT013	No Name Cr above mining	2	DUP/4-D	<0.25		94		<2.5	<0.13		<0.25	<2.5	0.47	
SCATT024	Sage Cr above mining	1		<0.25	0.125	2.9	2.9		<2.5	1.25	<0.25	<2.5	0.43	0.43
SCATT024	Sage Cr above mining	2		<0.25	0.125	<2	1	<2.5	<0.13	0.065	<0.25	<2.5	0.44	0.44
SCATT024	Sage Cr above mining	3		<0.25	0.125	<2	1		<2.5	1.25	<0.25	<2.5	0.53	0.53
SHETT019	Sheep Cr	1		<0.25	0.125	12	12		<2.5	1.25	<0.25	<2.5	0.41	0.41
SHETT019	Sheep Cr	2		<0.25	0.125	15	15	<2.5	0.6	0.6	<0.25	<2.5	0.46	0.46
SHETT019	Sheep Cr	3		<0.1	0.05	<5	2.5		0.1 B	0.1	<0.25	<2.5	0.5	0.5
SLUTT005	Slug Cr at USFS boundary	1		<0.25	0.125	21	21		<2.5	1.25	<0.25	<2.5	1.2	1.2
SLUTT005	Slug Cr at USFS boundary	2		<0.25	0.125	23	23	<2.5	0.83	0.83	<0.25	<2.5	1.1	1.1
SLUTT005	Slug Cr at USFS boundary	3		<0.25	0.125	14	14		<2.5	1.25	<0.25	<2.5	1.5	1.5
SMATT021	Smoky Cr above mining	1		0.38	0.38	<2	1		<2.5	1.25	<0.25	<2.5	0.45	0.45
SMATT021	Smoky Cr above mining	2		<0.25	0.125	5.2	5.2	<2.5	<0.13	0.065	<0.25	<2.5	0.32	0.32
SMATT021	Smoky Cr above mining	3		<0.25	0.125	7.6	7.6		<2.5	1.25	<0.25	<2.5	0.31	0.31

[1]all samples are filtered samples
[2]Al – aluminum, Sb – antimony, As – arsenic, Ba – barium, Be – beryllium, Cu – copper, Fe – iron, Pb – lead, Mn – manganese, Hg – mercury, Mo – molybdenum, Ag – silver, Tl – thallium, U - uranium
DUP – duplicate
4-D – part of a 4-day sampling event
< – value below the identified detection limit
B – analyte concentration detected between method detection limit and practical quantification limit
Avg – average
½ dl – for use in analysis, values below detection limit were estimated to be ½ of the detection limit

Appendix B, Table 1. Sampling results (mg/L) for the expanded list of surface water analytes, spring 2000, 2001, and 2002 (from Monitoring Well Installation Technical Memorandum for Final 2005 Phase II Supplemental SI Groundwater Plan, Montgomery Watson Harza, February 2007)

Mine	Station number	Al	Sb	As	Ba	Be	Cu	Fe		Pb	Mn	Mo	Ag	Tl	U
		2001	2001	2001	2001	2001	2001	2000	2001	2001	2001	2001	2001	2001	2001
Seeps, springs, headwater streams															
Enoch Valley Mine	MDS025	<0.001	<0.0025	0.0081	0.031	<0.005	0.0015		6.5	<0.00025	5	0.0033	<0.00025	<0.0025	0.0023
	MDS026	<0.001	<0.0025	<0.0005	0.023	<0.005	0.0018		<0.01	<0.00025	0.77	<0.00025	<0.00025	<0.0025	0.071
Henry Mine	MDS022	0.0041	<0.0025	0.0018	0.015	<0.005	0.0013		<0.01	<0.00025	0.027	0.0086	<0.00025	<0.0025	0.0067
	MST226							<0.02							
Ballard Mine	MSG003	<0.001	<0.0025	<0.0005	0.039	<0.005	0.00058		<0.01	<0.00025	<0.002	<0.00025	<0.00025	<0.0025	0.0022
	MST095							<0.02							
	MST096							<0.02							

Appendix B, Table 1. Continued.

Mine	Station identification	Al	Sb	As	Ba	Be	Co	Cu	
		2001	2001	2001	2001	2001	2002	2001	2002
Ponds									
Enoch Valley Mine	MSP017	<0.034	<0.0025	0.001	<0.065	<0.0050	<0.010	0.0024	<0.0045
	MSP018	0.074	<0.0025	0.00082	<0.065	<0.0050	0.002	0.003	<0.0045
	MSP019	<0.034	<0.0025	0.0033	<0.065	<0.0050	<0.010	0.0021	<0.0045
	MSP020	<0.034	<0.0025	0.0015	<0.065	<0.0050	<0.010	0.0012	<0.0045
	MSP021-avg	<0.034	<0.0025	0.0016	<0.065	<0.0050	<0.010	0.0016	<0.0045
	MSP022	<0.034	<0.0025	0.0018	0.068	<0.0050	<0.010	0.0013	<0.0045
	MSP023	<0.034	<0.0025	0.0036	<0.065	<0.0050	<0.010	0.002	<0.0045
	MSP031-avg	<0.034	<0.0025	0.0027	<0.065	<0.0050	<0.010	0.0021	<0.0045
Henry Mine	MSP014	<0.034	<0.0025	0.0016	<0.065	<0.0050	<0.010	0.0013	<0.0045
	MSP015	<0.034	<0.0025	0.0021	<0.065	<0.0050	<0.010	0.002	<0.0045
	MSP016-avg	<0.034	<0.0025	0.0013	<0.065	<0.0050	<0.010	<0.0012	<0.0045
	MSP055	0.0023	<0.0025	0.0008	<0.065	<0.0050	<0.010	0.0017	<0.0045
Ballard Mine	MSP010-avg	<0.034	<0.0025	0.0033	<0.065	<0.0050	<0.010	0.0043	<0.0045
	MSP011-avg	<0.034	<0.0025	0.0061	<0.065	<0.0050	<0.010	0.0041	<0.0045
	MSP012	<0.034	<0.0025	0.0039	<0.065	<0.0050	<0.010	0.0034	<0.0045
	MSP059	0.038	<0.0025	0.003	<0.065	<0.0050	<0.010	0.0021	<0.0045

Appendix B, Table 1. Continued.

Mine	Station identification	Fe	Pb	Mn	Hg	Mo	Ag	Tl	U
		2001	2001	2001	2001	2001	2001	2001	2001
Ponds									
Enoch Valley Mine	MSP017	<0.010	<0.0027	0.42	<0.00050	0.004	<0.0021	<0.0025	0.011
	MSP018	<0.010	<0.0027	3.4	<0.00050	0.022	<0.0021	<0.0025	0.1
	MSP019	<0.010	<0.0027	<0.0020	<0.00050	0.0086	<0.0021	<0.0025	<0.0080
	MSP020	<0.010	<0.0027	0.0085	<0.00050	0.0047	<0.0021	<0.0025	<0.0080
	MSP021-avg	<0.010	<0.0027	<0.0020	<0.00050	0.015	<0.0021	<0.0025	0.0084
	MSP022	<0.010	<0.0027	<0.0020	<0.00050	0.0086	<0.0021	<0.0025	<0.0080
	MSP023	<0.010	<0.0027	<0.0020	<0.00050	0.024	<0.0021	<0.0025	0.011
	MSP031-avg	0.08	<0.0027	0.036	<0.00050	0.0093	<0.0021	<0.0025	<0.0080
Henry Mine	MSP014	<0.010	<0.0027	0.017	<0.00050	0.004	<0.0021	<0.0025	<0.0080
	MSP015	<0.010	<0.0027	0.18	<0.00050	0.0072	<0.0021	<0.0025	<0.0080
	MSP016-avg	<0.010	<0.0027	0.0077	<0.00050	<0.0025	<0.0021	<0.0025	<0.0080
	MSP055	<0.010	<0.0027	<0.0020	<0.00050	0.036	<0.0021	<0.0025	<0.0080
Ballard Mine	MSP010-avg	<0.010	<0.0027	0.024	<0.00050	0.046	<0.0021	<0.0025	0.059
	MSP011-avg	<0.010	<0.0027	0.0036	<0.00050	0.019	<0.0021	<0.0025	<0.0080
	MSP012	<0.010	<0.0027	0.0021	<0.00050	0.025	<0.0021	<0.0025	<0.0080
	MSP059	<0.010	<0.0027	0.0045	<0.00050	0.009	<0.0021	<0.0025	<0.0080

Al – aluminum, Sb – antimony, As – arsenic, Ba – barium, Be – beryllium, Co – cobalt, Cu – copper, Fe – iron, Pb – lead, Mn – manganese, Hg – mercury, Mo – molybdenum, Ag – silver, Tl – thallium, U - uranium